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## The Cost of the Rail Pay Rise

**A**LTHOUGH the figures regarding the pay settlement arising from the negotiations on the Guillebaud Report had not been officially released at time of going to press, reliable reports estimate a total extra annual cost to the Commission of £40-£45 million. The settlement follows fairly faithfully, though not completely, proposals made in the report. It is believed that main-line train drivers and motormen will have their basic pay raised to £13 a week, an increase of 31s., and that, after a similar period of service (three years), shunting drivers will receive £12 8s. The differential between main-line and shunting drivers will be the first effective since nationalisation. Firemen will be able to earn up to £11 (the present basic maximum is £10 4s.), and the new top rates for engine cleaners will be £9 3s. Extra mileage payments are to be granted for journeys of up to 140 miles, and main-line drivers who are transferred to other work after reaching the age of 50 will retain their current pay rate instead of suffering a cut. Addressing the annual conference of the Associated Society of Locomotive Engineers & Firemen at Paignton on Monday, Sir Brian Robertson, Chairman of the Commission, pointed out that none of the parties concerned had got 100 per cent of what it wanted but that, as this applied all round, the overall result might perhaps

not be considered bad. He added that the outcome of the negotiations would make a tremendous difference to the industry. Mr. Ray Gunter, M.P., President of the Transport Salaried Staffs' Association, has described the pay proposals as "a major victory for our people and a complete vindication of our policy." This implies that T.S.S.A. is ready to accept the new rates, which have already been accepted by A.S.L.E.F. and the N.U.R. Agreement is also believed to have been reached by the working parties covering salaried and the remaining conciliation grades. The only rates not yet settled concern workers in the railway-owned docks. Our comment on the increases is in line with that of Sir Brian Robertson, who spoke these words at Paignton on Monday: "Efficiency in operation must be high. Economy in the use of our resources, equipment, and manpower must be carefully watched, and wastage in all its forms must be eschewed."

## Government Road Haulage Policy

**T**HE Special Advisory Group on the British Transport Commission was stated last week by Mr. John Hay, Joint Parliamentary Secretary to the Ministry of Transport, to be hard at work; he was speaking at the annual dinner of the Road Haulage Association at Grosvenor House, London, W.1., Mr. R. N. Ingram, National Chairman of the Association, presided. Mr. Hay expressed the view that the Government's "idea of getting advice on the detailed application of Government policy towards the railways from a group of businessmen with wide experience of the organisational problems of large-scale industry" was a sensible approach which would commend itself to the road haulage industry. Most of his speech was devoted to outlining the progress made in building and improving major roads, and plans for further works. The Government and the road haulage industry, he added, had worked together against the threat of nationalisation of the industry. Now that that battle had been won, the country would expect vigour and efficiency from the road hauliers, whom the Government would back to its utmost by providing a network of trunk roads "on top of the extraordinarily dense network of still quite serviceable roads which this country already has."

## British-Built Diesel Trains for Nigeria

**T**HE automatic control of gearboxes in the twin-unit diesel railcar sets supplied to the Nigerian Railway Corporation, and described and illustrated on pages 621-623, enables both the tractive effort and the vehicle speed to be controlled by the throttle lever. The state at which gears are changed is related to both the vehicle speed and the throttle lever, so affording the best combined engine and vehicle performance in all conditions. The device is the V.S. automatic control of Self-Changing Gears Limited. One advantage of the smooth gear change is the elimination of the initial high rate of wear on transmissions of vehicles operated by learner-drivers—an important factor where a large proportion of footplate staff must receive diesel instruction, and the number of suitable vehicles is limited. The railcar sets were built by the Drewry Car Co. Ltd. in conjunction with its associates, the Birmingham Railway Carriage & Wagon Co. Ltd. They include Davies & Metcalfe safety and vigilance control units, and adaptation to tropical conditions of recent techniques in décor and use of recently-developed materials.

## Swiss Federal Railways in 1959

**A**LTHOUGH passenger traffic receipts on the Swiss Federal Railways in 1959 at 360,300,000 francs were 3.3 per cent, and freight traffic receipts at 518,800,000 francs 7.7 per cent, above the figures for 1958, the administration only just succeeded in balancing its budget. Increases in traffics were counterbalanced by rises in expenditure. Adoption of the 46-hr. week did not at first necessitate a marked increase in staff, possibly because traffic was relatively light, and as a result of rationalisation. Traffic subsequently increased, and further employees were engaged. Increases in passenger and freight charges seem to have been accepted as necessary by the public. The freight tariff structure is to be revised to take further account of transport costs, and competition. Traffic in full wagon-loads, which is the most remunerative, has

risen, especially in transit through Switzerland. Increases in traffic have been concentrated on certain sections of line and junctions. There it has reached a point beyond which it would be impossible to develop it without impairing efficiency in operation. For that reason the timetables for the winter of 1960-61 will embody no major developments. Steps are being taken to increase the capacity of lines and junctions, especially on the St. Gotthard route.

### Canadian National Without Steam

**B**Y the end of April the Canadian National Railways had become fully diesel-operated except for the comparatively small electrified groups of lines around Montreal, Toronto, and Quebec, totalling only 104 route-miles out of the total 24,500. Thus a development begun in 1925 has been consummated 35 years later, though few, if any, at that time visualised the elimination of steam traction. Development at the beginning was tied up with Beardmore, whose engines were installed in the early single- and twin-unit railcars and in the one 2,660-b.h.p. twin-unit locomotive; but actually the real development did not begin until well after the second world war. Over the last decade diesel applications on the two big Canadian lines differed in principle, the Canadian Pacific endeavouring to dieselise complete divisions over a short time, whereas the National put its diesels first on to big-mileage runs, and had steam and diesel working alongside each other in each division. But the pace of the National was faster, and now, on completion, there are 2,144 diesel locomotive units and 28 railcars in stock, as against about 2,350 steam and 40 to 50 diesel units ten years ago, when mileage was 23,445.

### Breakdown Cranes for British Railways

**D**ESCRIBED elsewhere in this issue are 22 new travelling cranes ordered for emergency railway use by the British Transport Commission from Cowans, Sheldon & Co. Ltd., of Carlisle. Twelve of the cranes, which are of two types, possess a greater lifting capacity than that of any other type of railway breakdown crane in Britain. Four are driven by diesel engines with hydraulic transmissions: in this respect also they are unique, for they are the first diesel-powered breakdown cranes to be built for use in this country. All the machines were designed to the requirements of Mr. J. F. Harrison, Chief Mechanical Engineer, British Railways Central Staff. Their purpose is to lift heavy modern equipment such as electric or diesel locomotives. The heaviest of the two types—the 75-ton machines—are for mainline use; the remainder, which can lift up to 30 tons, will work on both main and branch lines. All the cranes are able to move at slow speeds under their own power and are capable of lifting, slewing, and derricking operations.

### No Room for Complacency

**T**HERE is no room for complacency as to British Railways freight traffics, according to "The Man on the Line" in the current issue of *British Railways Magazine*. Railwaymen, he rightly states, should "be frank and admit that we could give a lot better service than we are giving." That the railways are carrying more goods is only to be expected in the light of increased industrial production. A great deal nevertheless has been done by traffic staffs and others to capture traffic and to handle it efficiently and those who are conscious of having worked hard can take a little encouragement from what is largely the result of their efforts. The seasonal increase in passenger traffic combined with the large amount of civil engineering and other work being carried out on the line in connection with modernisation and re-equipment will make it harder than ever to maintain punctuality and otherwise give good service, essential at this critical time.

### C.T.C. Progress in New Zealand

**W**ITH the installation of automatic signalling and C.T.C. equipment on the ten-mile section of New Zealand Government Railways between Katiki and Palmerston, operation by C.T.C. over all single-line sections between Dunedin and Oamaru, some 78 miles, has been completed. Since the first section of this installation was brought into use, between

Oamaru and Meheno in September, 1955, steady progress has been made with this major resignalling scheme. Between Oamaru and Herbert there are two crossing loops controlled from Oamaru, and between Herbert and Sawyers Bay there are ten crossing loops controlled from Dunedin. In addition, this station at Palmerston has its own locally controlled inter-locking. Eight of the crossing stations are completely unattended, but all have local control panels for operation by train crews when they are required to shunt there. Completion of the Duendin-Oamaru C.T.C. installation brings the total mileage of C.T.C. in New Zealand up to 243. There are 153 miles in the North Island and 90 in the South Island.

### German Sleeping-Car Pool

**A** POOLING agreement has been concluded between the Compagnie Internationale des Wagons-Lits and the German Sleeping & Dining Car Company (D.S.G.) with the aim of improving services and of making available for travel agents a larger number of vehicles for services within the Federal Republic (Western Germany) and for transit through Germany. The agreement will apply to internal services; to those in both directions between Germany and Austria, Belgium, Denmark, the Netherlands, and Switzerland; and to traffic between these countries which passes in transit over the German Federal Railway. Wagons-Lits Company cars will work services between Germany and France and Italy. For the time being only Wagons-Lits vehicles are to work through between Germany and Denmark. To operate the pool, a special office has been opened at Arndtstrasse 33, Frankfurt/Main. No information is available at present on the effect which the agreement will have on some major services in transit, such as the "Nord Express."

### Faster B.A.O.R. Service to Berlin

**B**RITISH Army of the Rhine and Royal Air Force, Germany, personnel traffic between the United Kingdom and the Continent exceeds 10,000 passenger journeys a month in each direction. Ministry of Transport troopships ply thrice weekly between Harwich and the Hook of Holland, east of which journeys are by military special trains which include British military-owned restaurant cars staffed by the Wagons-Lits Company. Operation is by the Netherlands and German Federal Railways to the requirements of the British military Movement Control staff. Military passengers to and from Berlin hitherto have made connection at Hanover with British military all-sleeping-car trains to and from Berlin. From next Monday the military trains from and to the Hook will be re-routed and accelerated to give a fast service between the Hook and the Bielefeld, Herford, Gütersloh, Minden, and Hanover areas, also a through day service, the "Crossed Swords" (symbolising the British armed forces) between the Hook and Berlin Charlottenburg. Departure from the Hook will be at 9.12 a.m. (instead of 10.12 a.m.) and arrivals at Hanover at 3.26 p.m. (7.45 p.m.) and at Berlin at 9.40 p.m. (instead of 6.54 a.m. next morning). Westbound, the reduction in time from Berlin will be 8 hr. 35 min., because of a later start.

### Palletised Traffic in New Zealand

**S**EVERAL New Zealand firms are displaying interest in the possibilities of using pallets to speed up the handling of goods and to reduce handling costs. Last year the Government Railways placed an order with Charles Roberts & Co. Ltd. for 500 wagons specially designed for the conveyance of goods loaded on pallets. This is the first positive step to enable firms to take advantage of this modern method of handling goods. With fork-lift trucks and pallets, goods can be stacked higher in goods sheds and warehouses than would otherwise be possible, thereby achieving greater economy in the use of floor space. To enable the handling of palletised goods to be fully effective, the design of wagons requires special attention. For this reason, the new all-steel "Kp" class wagon being built by Charles Roberts will have double sliding doors on each side to give a maximum opening of almost 10 ft. The present standard width of railway wagon doorways is 4 ft. 6 in. With a tare weight of 7½ ton, each of the 500 new "Kp" wagons will be permitted to carry a maximum load of 14 tons.



### Increasing Popularity of the Green Line

**G**REEN Line services are reported by the London Transport Executive to be increasing in popularity. One reason for this is believed to be the intensified effort which has been made to regularise peak evening timings from London: by originating more duplicate vehicles from the central area, the Executive has made it possible for most regular passengers to find a punctual coach at their stop, though through vehicles from the opposite direction may be delayed by traffic congestion. It is likely that more customers will be won by the end of the year, for added comfort will be provided next winter when heating is installed on both decks of RT double-deck vehicles in regular duplicate use during peak hours. This work will be carried out during the summer. The Green Line coach offers many advantages for travel between the capital and outlying rural districts: speedy, comfortable, and short-interval services are a good "buy" for the businessman who is beginning to tire of an arduous run up to town by private motor-car. This aspect is stressed in one of the two new London Transport posters reproduced elsewhere in this issue.

### Proposed Mergers in the U.S.A.

**A**MALGAMATION of the New York Central System with the Baltimore & Ohio and Chesapeake & Ohio Railroads, now reported to be under discussion, would result in a network with a route-mileage of well over 20,000, and in a strong position to capture and maintain freight traffic in a large area of Eastern and Mid-West U.S.A. In 1958 an alliance, or even closer union, was proposed between the New York Central and the Pennsylvania Railroad, the two largest systems, in most respects, in the country. This project was abandoned. The merger now being negotiated would increase the difficulty of amalgamation between the Pennsylvania and other lines, though the former company already has a financial interest in some smaller concerns. The approval of the Interstate Commerce Commission is understood to be awaited for the merger of the Erie and Delaware Lackawanna & Western Railroads, and the Norfolk & Western and New York, Chicago & St. Louis ("Nickel Plate") are stated to be considering amalgamation. Other mergers are being discussed.

### Effects of Subsides on Operating Safety

**C**OLONEL W. P. Reed's report on the West Sleekburn collision last November, in which two enginemen were killed, brings to light a hidden danger affecting railways in colliery districts. Subsides may alter gradients and render obsolete both records and local operating instructions. The North Eastern Region has since taken remedial action, but Colonel Reed rightly thinks that the same precautions should be taken by other Regions. He finds that while the driver of the up train approached the signal cautiously, events showed that he was not driving with sufficient care "for this difficult section of line." This included a downhill gradient of 1 in 92½, and the driver knew he had to stop at West Sleekburn home signal. The engine skidded and the train over-ran the signal and collided with another crossing its path. West Sleekburn signalbox had been destroyed by fire some months before, and temporary arrangements were in force. Colonel Reed calls attention to one resulting irregularity, and also to the signalman's method of giving warning at the box in rear, but states that neither factor contributed to the accident. In the confusion there was some delay in summoning doctors. The report emphasises that the need for them should be anticipated.

### Camping in Luxury

**T**HE first camping coaches converted from Pullman cars are now available in attractive spots on British Railways. A brief description is given on page 636. The former Pullman cars are a considerable improvement on the ever-popular camping coach, retaining the original beautiful woodwork characteristic of Pullman vehicles. Full kitchen and bedroom equipment is supplied, with toilet accommodation, linoleum-covered floors and rugs. The layout consisting of an entrance vestibule at one end, followed by the kitchen and a living room. Two sleeping compartments open off a side corridor, each with two bunks equipped with spring interior mattresses.

The main bedroom occupies the full coach width at the rear, and contains two single beds. Another door at this end of the coach opens out on to the rear vestibule, which can be used as a veranda should this be desired. The sites vary from rural Dorset, in the Southern, to the Norfolk coast in the Eastern Region, and the Western Highlands of Scotland. In an age in which the peace of the holidaymaker is often disturbed by the sounds of road traffic, the coaches afford quiet. In many places the number of trains passing is small, and the coaches are located to minimise what little noise trains make.

### Motive Power Changes on British Railways

**A**CCORDING to the statement by the British Transport Commission recorded in the Contracts and Tenders page of our May 20 issue, 1,827 main-line diesel locomotives have been ordered or authorised for British Railways. Nearly 550 of these are in service. It is expected that about 900 will be in service by the end of this year, and 1,200 may be in service by about the middle of 1961. Up to the end of November, 1959, 1,286 main-line diesel locomotives had been authorised since mid-1955 and orders had been placed for 1,176 of these. This means that authority has been obtained for acquisition of over 500 more, and actual orders placed now total 1,653 locomotives. No doubt the additional orders will be spread over a couple of years, and they will certainly be divided between British Railways works and private industry. The more powerful types of diesel locomotive are now being delivered in large numbers.

Reference to progress in electrification was made in our May 13 issue. By the end of this year, which will see inauguration of electric traction at 25 kV., a.c. of 200 route-miles in the London area of the Eastern and the Glasgow area of the Scottish Regions, and on the Manchester-Crewe line of the London Midland Region, conversion will be at an advanced stage of 280 route-miles additional to the total of 1,320 route-miles already electrified.

By January, 1962, the Commission expects that diesel or electric motive power will have virtually replaced steam traction in East Anglia and in South Eastern England. The principal areas from which steam traction will have been very largely withdrawn are the main line of the Western Region (the former Great Western Railway) beyond Newton Abbot; on the main line of the London Midland Region (the former Midland Railway) between St. Pancras and Bedford; and on the East Coast main line of the Eastern, North Eastern, and Scottish Regions from Kings Cross to the North. Steam locomotives, it is announced, by that time will be used everywhere mainly on goods trains. Nearly all stopping and local trains will be worked by electric or diesel power, as will most expresses.

A map in the headquarters of the Commission, showing the sections which by the end of 1961 will be worked mainly, or very largely, by diesel or electric power, shows the extent of the changes in modes of traction. The most important lines worked largely by steam are shown as those of the Scottish Region from Carlisle to Edinburgh via Hawick (the Waverley Route of the old N.B.R.); the main lines of the Caledonian Railway from Carlisle to Glasgow, and from Glasgow via Perth to Aberdeen; the main line of the Glasgow & South Western from Carlisle to Kilmarnock; and the main lines of the former London & South Western Railway (now Southern Region) from beyond Brookwood to Southampton, Bournemouth, and Weymouth, and to Salisbury and Exeter. A good many trains on these sections, as for instance between Carlisle and Glasgow, will be diesel-hauled. In view of the past and present activity of the Southern Region and its predecessor, the Southern Railway, in main-line electrification, continuance of steam-hauled expresses into and out of Waterloo may seem surprising, unless it is remembered that until the end of 1961 electrification resources in the Southern Region will be devoted to conversion of the lines from Sevenoaks and Maidstone East to Ashford, Canterbury West, Dover, and Ramsgate, and that plans exist for electrification of the main line to Southampton and Bournemouth, whilst electrification west of Salisbury is under consideration.

What the map shows moreover is progress during the next 18 months or so. Replacement of steam haulage will continue at equal speed—or greater, as familiarity with new techniques increases. The dates by which some railways in Western Europe expect to withdraw their last steam locomotive from

service were given on page 563 of our May 13 issue. That for British Railways was shown as about 1985, and that for the German Federal Railway as about 1980. These are the last two major railways in Western Europe to abandon steam. That does not indicate conservatism. The sheer magnitude of the fleets of steam locomotives makes the task of replacing them immense. Many of the machines moreover are and will long remain in good condition—a tribute to their design and workmanship. Availability of coal influenced British and German managements in deferring a final decision to replace steam traction until the advantages of other forms of power were proved. Both systems suffered during the war, and there were many other objects to which priority was given in national resources in money and materials in post-war reconstruction. Railways in Britain especially were not accorded the same proportion of national effort as were those of France, for instance, another large system, where the steam haulage is expected to be withdrawn by 1970. The other railways mentioned are smaller, with readier access to hydro-electric power, or are relatively remote from coal mines.

### Industrial Consultant's Views on Transport

**E**FFICIENCY in transport management is one of the subjects discussed last week by Mr. A. D. Wilson, Managing Director of Associated Industrial Consultants Limited, in his opening address to the British Institute of Management and Institute of Transport conference on transport management at the Festival Hall, London, S.E.1. The firm of consultants with which he has been associated for over 30 years is constantly concerned with transport problems. He estimates that in probably 20 per cent of the concerns served by his firm, the organisation of transport is, or becomes, part of the investigation on the client's behalf.

The magnitude of the transport industry is stressed. When, a few years ago, Mr. Wilson was making a survey of the Acton Works of the London Transport Underground, the late Mr. W. S. Graff-Baker, then Chief Mechanical Engineer (Railways), pointed out that "every time your heart beats, 100 pneumatic doors open and close on the underground railways of London." Transport, he states, is the largest single industry in the country. If the transport sections of manufacturing and distributive trades in this country are included with transport, they account for nearly 2,000,000 people. Adding to this those employed in the construction of transport equipment gives a total of nearly 3,500,000 or about 15 per cent of the working population.

Because transport in general is tied to the elements, to land, sea and air, it cannot be planned with the precision of a factory conveyor line. It is buffeted about by conflicting cross-currents of industrial and urban development and is susceptible to rapid change in types of goods carried and to the habits and requirements of users; and, far more than any producer, it carries the peaks and suffers the troughs of seasonal business. Comparative indices of effectiveness are not readily found; the cost per ton-mile, for instance, is not a conclusive statistic. Standards of performance are not easily established. This applies particularly to railways. A transport organisation is particularly difficult to control through the scattered nature of its activities, compared with departments under direct factory supervision. Despite this, Mr. Wilson maintains, it is hard to see any vital difference in principle between transport management and other management. The differences which do exist do not establish the need for any separate corpus of theory or practice, and the techniques of scientific management can be applied.

The British Productivity Council drew attention some years ago to the fact that few transport undertakings use, for example, work study. Mr. Wilson might have added that the British Transport Commission, and British Railways in particular, are honourable exceptions. Increasing use is being made of work-study techniques in several spheres of railway activity, and notably civil engineering. He maintains that only with the comparatively recent development of operational research techniques can some transport problems be solved scientifically, using means such as the mathematics of the queuing theory and linear programming. These are exceptions. The great bulk of the problem of transport operation, he emphasises, lends itself to treatment by simpler means, by

method study and work measurement, by planning, by budgetary control and by management accounting.

Many of his remarks are concerned with transport management in industrial firms. Railway officers who deal with such transport managers in their capacity as consignors, when tempted to criticise the operation of their clients' transport department, should remember that it is by no means always the transport manager alone who is to blame. He is frequently harassed by day-to-day problems of urgency and expediency. A lack of attention to transport at the highest level in many firms may reflect on the status of the transport manager himself—which is not conducive to efficiency.

### The Brazilian Railway Materials Industry

**T**HE Brazilian Confederation of Industries, in a recent study, has estimated the combined needs of the 31 railways operating in Brazil, federal, state, and privately-owned, and the capacity of the railway material industry to meet them.

It estimates that 644 locomotives are required, including 21 electric, 765 railcars and other motor-driven vehicles, 1,144 passenger coaches of all classes, 10,206 freight wagons, 10,701 compressed-air brakes, and 5,590 automatic couplers. In addition, signalling equipment is to be installed on 5,091 miles of line, and telegraph and telephone communications on 965 miles. Some 624 miles of new line are to be laid, the gauge widened on 638 miles, electrification to be carried out on 254 miles, and maintenance or rehabilitation to be carried out on 22,047 miles.

The Brazilian railway materials industry produces the following equipment, although in some cases the output is insufficient to meet market requirements: goods wagons and passenger coaches, rails and accessories, cast-iron and steel wheels, axles and bogies, couplers and drawgear, springs, signalling equipment, electric motors, accumulators, and compressed air brakes. The following items, among others, are still imported: vertical and lateral buffers for passenger coaches, air-conditioning equipment, generators, tension regulators, and mechanical transmission for generators.

Locomotives are still purchased abroad, but Industries Reunidas Ferro e Aço (IRFA) has arranged with Brissonneau & Lotz, of Paris, to build its locomotives in Rio Grande do Sul. At the end of 1956 the Krupp Company of Brazil announced plans to build electric, diesel-electric, and diesel-hydraulic locomotives at Campo Limpo, in São Paulo. As regards railcars and inspection vehicles these may be produced later; the industry is reported to have suffered substantial losses in attempts to manufacture them in the past.

Six companies are building rolling stock. They are: Fabicar Nacional de Motores at Cruzeiro, São Paulo, and Rio de Janeiro; Companhia Brasileira de Material Ferroviária (COBRASMA) in São Paulo City; Companhia Industrial Santa Matilda at Lafaiete, Minas Gerais; Usina Metalúrgica Joinville at Joinville, in Sta. Catarina; Material Ferroviária S.A. (MAFERSA) in São Paulo and Belo Horizonte; and Companhia Sorocabana de Material Ferroviária (SOMA) in São Paulo City.

These factories are capable of turning out 3,000 goods wagons a year and have an average output of 1,507, but have not yet been called upon to work to capacity in the building of passenger coaches. Average production amounted to 24 units each per year between 1951 and 1958, but rose to 49 in 1959. The Confederation of Industries attributes one obstacle to expansion: the fact that no company has hitherto specialised in turning out such complementary parts as seats, door- and window-frames, locks, and so on. This deficiency is to be remedied by MAFERSA, who is organising a factory to produce such parts under North American licences. The same company is installing a foundry, equipped with a 6,000-ton press, with capacity to produce 30,000 tons of forged pieces annually, including wheels for railway wagons.

Another factor obstructing expansion has been the difficulty experienced by the companies in obtaining adequate finance, as loans for building passenger coaches come last on the Brazilian Development Bank's priority list. In 1959, the Central Brazil Railway placed orders with national manufacturers for 100 electric cars for the Rio, São Paulo, and Belo Horizonte services. Of the total, 57 had been delivered by March, 1960.

COBRASMA holds licences from the Budd Company, of



Philadelphia, to manufacture its rolling stock and other equipment, including stainless-steel passenger cars, but bobbins and a large range of other equipment must be imported. SOMA, associated with General American Transportation Corporation, of Chicago, specialises in tank and refrigerator wagons, leases rolling stock to bulk transport companies, and maintains a chain of repair shops in South Brazil.

Considerable quantities of rails must still be purchased abroad, as local steel manufacturers are unable to meet the demand; 465,690 tons in all must be imported and the government, to reduce the cost, has exempted foreign rails from payment of customs duties and consumption tax. The Brazilian Development Bank financed imports of 293,100 tons early this year.

In March last year Freios e Sinais do Brasil (FRESINBRA) inaugurated a factory in Sao Paulo to produce signalling equipment and air brakes under licence from the Westinghouse Air Brake Company, U.S.A. Production of air brakes is expected to reach 3,000 sets this year.

### Scottish Region Summer Timetable

**P**RICIPAL interest in the summer timetable of the Scottish Region attaches to the greatly increased and accelerated service between Edinburgh, Kirkcaldy, Dundee and Aberdeen, and Edinburgh, Dunfermline and Perth. This has been made possible by the extensive introduction of diesel locomotives and multiple-unit diesel train sets, and was actually introduced on April 4. Between Edinburgh and Aberdeen the average reduction in journey time is half-an-hour each way, and the present averages are 4 min. less than those which obtained immediately before the war of 1939-45. In 1939 there was one 3-hr. train each way; today there are two, and their times, 8.5 a.m. and 5 p.m. from Edinburgh and 7.30 a.m. and 4 p.m. from Aberdeen, will be of the maximum convenience to business travellers.

The two northbound 3-hr. trains are 50 and 70 min. quicker to Aberdeen respectively than the previous 7.30 a.m. and 4.15 p.m. As the new trains are non-stop to Dundee, the two latter still run as far as Dundee to serve the intermediate points. The 7.30 a.m. and 4 p.m. from Aberdeen are 55 and 41 min. faster than the former 7.5 a.m. and 3.40 p.m. Other substantial accelerations are 24 min. by the 2.10 p.m. (previously 2.15) and 23 min. by the 7.10 p.m. (formerly 6.45) Edinburgh-Aberdeen; and 23 min. by the 9.40 a.m. (formerly 9.18) and 35 min. by the 5.45 p.m. (formerly 5.17) from Aberdeen to Edinburgh. A feature of the new service is its even-interval arrangement. At 10 min. past each hour from 6.10 a.m. to 11.10 p.m. a train leaves Edinburgh for Thornton Junction or beyond; the expresses already mentioned take their turns in this sequence, and most of the remainder, up to and including the 11.10 p.m., proceed to Dundee. At 40 min. past each hour from 8.40 a.m. onwards there are stopping trains from Edinburgh to Kirkcaldy, several of which proceed further. In the reverse direction the trains are so timed that there is a service from Kirkcaldy to Edinburgh at each even hour and half-hour throughout the day. Similarly from Edinburgh to Dunfermline there is a half-hourly service at 3 and 33 min. past each hour, most of the trains proceeding either to Perth, Stirling or Thornton; the steam-hauled expresses for Perth take their place in this sequence. From Dunfermline Lower departures for Edinburgh are at 20 and 50 min. past each hour.

Where diesel-multiple-units have replaced previously steam-hauled trains, accelerations between Edinburgh and Perth range from 20 to 36 min. One object of these intensified services doubtless is to create a preference for rail travel between Edinburgh and Fife well in advance of the opening of the Forth road bridge, now under construction. A service of eight passenger trains an hour over the Forth Bridge is one of unprecedented density, and at certain times of the day there are more passenger trains even than this.

Certain of the new trains provide new connections to and from London and other cities south of the Border. The 9.3 p.m. from Edinburgh to Perth, for example, connects with the 1 p.m. "Heart of Midlothian" from Kings Cross, giving a Perth arrival at 10.28 p.m., 2 hr. ahead of the 1.10 p.m. from Euston; the 4 p.m. "Talisman" also brings a passenger into Perth 6 min. only behind the Euston train. The 11.10 p.m. from Edinburgh makes it possible to leave Kings Cross for Dundee as late as 4 p.m., by the "Talisman," and reach

Dundee by 12.52 a.m. The 9.17 a.m. from Perth has a good connection with the 11 a.m. from Edinburgh to Kings Cross, with a London arrival at 6.42 p.m., 79 min. earlier than the 9 a.m. from Perth to Euston. The new 2.25 p.m. from Perth connects with the 4 p.m. "Talisman" from Edinburgh, and so makes possible an 8½-hr. journey to London, with an arrival only 24 min. later than that of the 12.20 p.m. from Perth to Euston.

Further considerable decelerations will take place of certain of the West Coast services, because of electrification work south of Crewe. The first section of the "Royal Highlander" will leave Euston as early as 6.30 p.m. (7.5 p.m. last summer) and reach Inverness at 8.39 a.m. (formerly 8.54). The all-sleeping-car 10 p.m. from Euston to Glasgow will start at 9.35 p.m., but reach Glasgow at 6.40 a.m. as now. The 11.40 p.m. and 12.10 a.m. from Euston will be 5 and 20 min. later into Glasgow, at 9.30 and 9.50 a.m. respectively.

It is evidently intended to keep to the severely restricted eight-coach formations of the "Royal Scot," "Midday Scot" and "Caledonian," with no more than 72 first and 120 second class seats in each (compared with 66 first and 210 second in the equally fast East Coast "Talisman," or 84 first and 258 second in the 7 hr. 5 min. "Flying Scotsman"). With such limitation hardship may be inflicted on passengers unable to obtain seats, on the three West Coast trains mentioned, on such workings in particular as the up "Royal Scot" (which in past summers has frequently loaded up to 13 and 14 coaches in all) or the down "Midday Scot." London passengers unable to obtain seats in the former will not reach Euston until 2 hr. later, and those left over from the latter will be 2½ hr. later into Glasgow. Any excluded from the up "Midday Scot" will have no alternative service whatever.

A drastic change is to be made in the service between Inverness and Wick, caused by the closing of 24 stations, including Beaully, The Mound and Dornoch. In the first 40 miles, between Inverness and Fearn, only Dingwall and Invergordon will remain open. The consequential accelerations will be considerable. The 6.40 a.m. from Inverness will reach Wick at 12.9 p.m., 38 min. earlier; and the 11.5 a.m. (previously 10.40 a.m.) at 4.27 p.m., 17 min. earlier. Coming south, the 8.35 a.m. from Wick will start at 9.20 a.m., but reach Inverness 5 min. later only, at 2.45 p.m.; the 3.35 p.m. from Wick will be into Inverness 25 min. earlier, at 9.2 p.m. The Kyle of Lochalsh trains gain from 7 to 11 min. only. The stopping trains at 3.18 and 9.55 p.m. from Inverness to Tain, and 12.5 and 3.45 p.m. from Tain to Inverness also will be withdrawn, the last train for stations north of Dingwall leaving at 4.35 p.m.

### The Santa Fe Railroad

(By a correspondent)

**T**HE 65th annual report of the Atchison, Topeka & Santa Fe Railway Company is a neat brochure, bearing on its cover a night picture of the diesel shop at Argentine, Kansas, and showing on an inner page two freight trains, hauled by 2,400-h.p. diesel locomotives, passing in a canyon near the border between Arizona and California. These illustrations emphasise the fact that in 1959 the Santa Fe operated 13,000 miles of road entirely by 1,128 diesel units—770 for road service and 358 for shunting. They also signify that the Santa Fe is primarily a freight line. Last year its freight revenue reached a new high of \$534,388,000, while passenger revenue was almost stationary at \$39,539,000, a figure 17 per cent below the average revenue for 10 years 1948-57. The record amount in that period was \$57,539,000 for 1952, but "streamliners" no longer attract custom as they used to do, and airlines are ruining first-class Pullman travel.

Last year passenger revenue for all American railroads was down \$24 million, or 3.6 per cent. This year began with a further decrease in January of \$2,787,000, or nearly 5 per cent. The Santa Fe had a moderate decline of \$60,440, or 1.8 per cent, but its advertising programmes now lay stress on its facilities as a freight carrier. Claiming that it is "the largest railroad in the U.S.A., always on the move toward a better way," traders wanting fast dependable service are urged to call "Santa Fe System Lines." The campaign is helped by the shortening of westbound freight schedules from Chicago by

two full days, while goods from the Far West now arrive a day earlier at Chicago. Lower rates are being quoted for certain traffic, such as fruit and vegetables, loaded in large enough quantities to use wagons to close on capacity. The Santa Fe is also keen on extending plans for carrying road trailers on railway flat wagons.

The slogan used in the 1959 advertising programme was "Santa Fe—Partner in America's New Growth." The annual report reproduces a typical piece of advertising copy, which states that the Santa Fe supplies more than 16,500 refrigerator cars in the season to haul over 297 million heads of lush, green lettuce to Eastern markets. Just one example of the transport furnished by the railroad every year! There is no question about the efficiency of Santa Fe freight working. In 1959 the railroad carried 65,831,000 tons of revenue freight for an average distance of 547 miles. The wagon-load was nearly 28 tons and the train-load 1,186 tons. Freight train speed between terminals was 24.7 m.p.h., a mile-and-a-half faster than in 1958. Quicker transits were secured at the cost of a 2 per cent reduction in gross ton-miles per train-hour to 76,153—a level far above the general average for U.S.A. railroads.

The company did not neglect its passenger business last year.

It raised the average speed of its passenger trains from 49.7 m.p.h. to 50.2. Hitherto the only Western railroad to record a speed of over 50 m.p.h. was the Union Pacific. Yet the Santa Fe carried only 2,621,220 passengers last year—56,810 fewer than in 1958. On an average a passenger travelled 639 miles, 17 more than in 1958, and paid over \$15 for the journey. There is no profit in passenger services and the Santa Fe was glad to save 900,000 passenger train miles in 1959 by cutting out poorly patronised services and combining main-line trains in times of light traffic.

Last year's operating expenses were up 7.5 per cent, partly because the company carried out its maintenance and repair programmes in full. By the end of 1959 the operating ratio rose to 75.3 per cent, but the property was in good order. Undeterred by a 2 per cent drop in net income last year, the Santa Fe Board now contemplates capital expenditures totalling \$100 million in 1960, divided equally between new equipment and betterments to permanent-way and structures. This is the largest expenditure ever planned in the company's history. Designed to produce economical working and to keep pace with the development of Santa Fe territory, the scheme deserves success.

## LETTERS TO THE EDITOR

(The Editor is not responsible for opinions of correspondents)

### United States Passenger Services

May 21

SIR,—On page 592 of your May 20 issue a paragraph suggests that the Burlington Railroad gained passenger patronage in 1959, when receipts were 2 per cent above 1958. These receipts were nearly one per cent lower than in 1957 when the Burlington earned its highest passenger revenue during the past eight years, \$20.9 million, but had a passenger deficit of \$24.7 million, which absorbed 54 per cent of its freight net operating income.

The Burlington's position did not improve last year, as total operating revenues were up rather less than 2 per cent, while total operating expenses rose by 4.7 per cent. Earnings before charges were down 17 per cent and net income was 9 per cent lower. Its future depends on its ability to enlarge freight carryings. Since 1956 it has withdrawn passenger services from 524 miles of road—a drop of 10 per cent—cut passenger train miles by 1,800,000, or 15 per cent, and halved the mileage run by self-propelled motorcar trains after trying these units thoroughly. Its founder, the great J. J. Hill, always had more faith in ton miles than in passenger miles. Time has proved him to be right.

Yours faithfully,

R. BELL

Clacton-on-Sea

### Electric Working Through the Channel Tunnel

May 20

SIR,—Having only just read the letter published in your May 6 issue on the danger of fire in the proposed Channel Tunnel, I would like to point out to your correspondent that the heat generated in an electrical fire during the persistence of a short-circuit is proportional to the square of the current passing.

An electric locomotive developing 3,000 h.p. would be drawing 4,000A. from a 750-V. d.c. supply but only 120A. from a 25,000-V. a.c. supply. With the d.c. system a short-circuit passing several thousand amps might persist for some considerable time as it would not trip the breakers, but with the high-voltage a.c. system the breakers would be set to trip at a few hundred amps.

Two years ago there was a short-circuit cable fire in a train in a tunnel on the L.T.E. Central Line, attended by fatal results, but I have never heard of a similar accident in the Alpine tunnels of the Swiss Federal Railways. These are electrified at 15,000 V. a.c. and the traffic through them is hauled by standard classes of locomotives which are also equipped with transformers across the high tension supply.

May I add that the fumes from burning hydrocarbon oil are nothing like as dangerous or unpleasant as those from burning rubber insulation?

Yours faithfully,

G. M. BARRETT

Flat 7,

92, Elm Park Gardens, S.W.10

### Covering in Metropolitan and District Lines

May 13

SIR,—Having been kept awake half the night by noisy maintenance work (rail replacement, according to the non-apologetic Public Relations Department of the London Transport Executive) in an open section of the Inner Circle near my flat, may I ask whether the Executive would consider covering these short open sections, numerous in Kensington and Bayswater? When the Metropolitan and District Lines were built nearly a century ago these urban cuttings were no doubt useful for ventilation, but steam traction ceased 55 years ago. The noise of normal train movements from early morning until late is something that residents would gladly do without.

Several hundred square yards of highly valuable land for building new houses or flats would make the cost of coverage worth while for London Transport, and insulating the slight vibration and noise of trains in tunnel should not be difficult with modern materials. The larger open areas of track near the Cromwell Road and South Kensington Station are even more valuable in a densely populated near-central area, as the situation of the West London Air Terminal shows.

Yours faithfully,

G. A. ALLAN

59E, Linden Gardens, W.2

### London-Barnsley Passenger Service

May 23

SIR,—The statement in your May 20 issue, that the St. Pancras-Sheffield-Halifax service "for the first time provides Barnsley with a through coach to London at 9.54 a.m. and from St. Pancras at 5.5 p.m." is no doubt strictly accurate, but might lead readers to think that Barnsley has never before had through coaches to and from London.

These were provided up to shortly before the last war, and in 1932, for example, left Barnsley at 2.38 p.m., with a return service from Marylebone at 6.20. The journey times were 4 hr. 6 min. down and 4 hr. up.

Yours faithfully,

T. V. NICHOLSON

8, Amersham Road, High Wycombe



## THE SCRAP HEAP

### Easing Recruitment ?

At the present birth rate there are 300 babies born every day in Great Britain who are either destined to be transport workers—or their wives, stated Mr. A. D. Wilson, Managing Director, Associated Industrial Consultations Limited, at the British Institute of Management and Institute of Transport conference on transport management last week.

### "Positively Last Appearance"

The last two regularly scheduled steam locomotives on a major American railway recently gave a farewell performance for the benefit of 2,500 saddened devotees. But, as with opera singers, one farewell leads to another; so many more enthusiasts wanted a final ride that another trip had to be arranged.—From *"The Economist."*

### The Lost Thirteen Trains

The complications at Cannon Street station are naturally increased to an incalculable extent by the incessant stream of traffic. We are told that the total number of trains daily coming into the station is 398, and that of trains going out is 385. The work of handling them without accident seems to call for super-human qualities.—From the *"Financial Times"* of May 9, 1900.

### On Taking One's Harp to a Party

Under the heading "Pursued by Harpists," Paul Jennings wrote in *The Observer* of April 3, 1960, as follows:—

I wonder if Mr. Guillebaud knew about this slip of paper, which a friend of mine discovered in a train:—

British Railways, N.E. Region,  
Traffic Headquarters, York,  
November 19, 1959

#### COMMERCIAL CIRCULAR

#### P. 326 CHARGES FOR HARPS ACCOMPANYING PASSENGERS

With reference to Joint Circular dated October, 1959; it will be observed from the list of articles shown in Group 3, Scale 1, that the word "Concert Harps" has been amended to read "Harps" and the charges shown apply only to Concert Harps exceeding 4 ft. 6 in. in height. Harps not exceeding this height when accompanied are conveyed free. . . .

What a lot of harpists must have been travelling to make this necessary at all. If a man were to get out at, say, Doncaster, with a huge plywood letter F, or a stuffed bear, or a long steel spiral thing, the inspector would simply make an *ad hoc* decision:—

"Got a ticket for that thing?" he might say to the man with the steel spiral thing, "It's over 4 ft. 6 in."

"It's a grouting bodge, mate. Personal tool. Anyway, it's in two sections," the man might say, unscrewing it. Then he would disappear, whistling an ancient tune, into the Yorkshire night: probably the only bodge-grouter to enter the inspector's life (only a few left now, traditional craft, when some bodge-

grouting job is necessary in Doncaster—in wiremill, tinshop, bellpit?—urgent messages go to Wiltshire bodge-grouter). . . .

But there is something about these harpists that suggests a multitude, a mounting confusion, a need to regularise and codify. Like this:—

#### SCENE 1

An office at Traffic Headquarters, York. Smiththwaite, a senior official, tallish, fifty-ish, fine bony intellectual face, high forehead, balding, wears a sober yellow waistcoat, is staring thoughtfully out of the tall window at a prospect of castellated walls on green mounds, grey roofs and towers. Enter Brownthwaite, his assistant, a little, round, smiling man. He gives S. three letters.

B.: More about harps, sir. One from the Association of Celtic Women in Yorkshire, one from Madame Plinka, one from Jonesthwaite the sidingsman—they've still got the carriage with her harp stuck in the door, he wants a Damage Authority to cut it out.

S. (wearily): What do the Celtic Women want this time?

B.: They're having a Combined Môd and Eisteddfod. On Bank Holiday. They want a special train. And they're still going on about Excess Charges.

S.: I suppose we'll have to lay it on. Write to Miss Llewellynthwaite, and tell her also we'll accept harps free if they're under 4 ft. 6 in. in height.

#### SCENE 2

A large north-eastern junction. It is a very hot day. There are many women with harps, some practising *penillion* singing to themselves. The station is filled with the hiss of steam and the blooping and twangling of harps. On Platform 11 Smiththwaite is in consultation with Miss Llewellynthwaite, Secretary of the Association of Celtic Women in Yorkshire; a small, moony woman in a green dress of wool and beads.

S.: I'm sorry. The fact that you can get them through carriage doors doesn't mean you can keep them in compartments. It's—well, it's not safe. I—

(A large female figure hoves in sight, followed by a porter pushing a harp, 7 ft. high, on little wheels. It is Madame Plinka, renowned international harp virtuoso.)

Mme P.: Meester Speetvite, ollvays you are trobbles makink by me. I em gifink recital in Durham, so long is dees man getting from the train my 'arp, I em losink connection. (She spies the Celtic Women.) Und vy DESE vimmin, ollvays bloop bloop on der liddle 'arps, der peasants' arps, are nozzink payink?

Miss L. (with dignity): In its broadest sense *penillion* singing, *canu penillion*, includes all songs with harp accompaniment—

B.: That's what we're all arguing about, isn't it—harps accompanying people, ha ha—

(Smiththwaite gives him a terrible look.)

Mme. P.: Foh! I shpit on your penicillin. Amateurs! Peasants! I vos seven year in the Conservatoire, Furtwangler, 'e say to me—

S. (diplomatically): Quite, Madame, you are a concert artist. Your harp is classed as a concert harp.

#### SCENE 3

Back in the office, Smiththwaite is staring out of the window, more distractedly than ever. The door opens slightly. Brownthwaite, now two feet in height and dressed in leaves, tiptoes in carrying a small harp, makes a faint *glissando* behind Smiththwaite's back and goes out again, smiling an ancient, terrible smile. Smiththwaite starts to write this circular. But as he bites his pen, faint murmurs of music thrum through the building. The door opens again, admitting a strange light, and louder music.

Smiththwaite flings down his pen and rushes out, crying—

"I come, I come!"

#### INSTRUMENTAL FACTORS

Mr. W. H. Vine, Commercial Officer, York, North Eastern Region, wrote the following letter addressed to the Editor of *The Observer*:—

Oddly enough I read Paul Jennings "Pursued by Harpists." That his opening fact is correct let me admit and write *mea culpa*. Yet it is not solely for the gain of pelf that charges are raised on large-sized harps.

We are confronted with the law that the greater the harp the greater the problem. Obviously, our staff, staggering under their loads of gargantuan harps, must think of their ancient protector, Jubal. Those who know their Genesis will recall "he was the father of all such as handle the harp. . . ."

Thus by the introduction of a judicious charge for the genus "larger harp" we do become the railwaymen's modern Jubal and, by the control we are thus able to exercise, provide to some extent amelioration for the Zacchæus in our midst. And it is not solely the Celtic or the International harpist we may have to deal with. At any time we may have to cope with harps from Tara and harps from Innisfail and then to such an extent that on hearing of their coming railwaymen could be excused at turning to the Latin root of Carpo and so twitch or pluck.

However, it is not for me to harp or dwell excessively on the subject but I must observe that, whilst far short of emulating James I who placed the harp in the third quarter of the Royal achievement of Great Britain, at least I have placed it in the centre page of *The Observer*.

I could continue but, for brevity, studiously will refrain from harping on the same string as it is not for me, as Madame Plinka might classically have quoted, *eandem cantilenam recinere*.

## OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

### NEW ZEALAND

#### Wagon for Express Services

Construction in railway workshops of 80 new "Z" class double-bogie covered goods wagons for express goods services has been approved. They will cost approximately £400,000. The new wagons are required to meet the increasing demand for express transit of a wide range of goods, including the products of paper mills, fruit, vegetables, furniture, and general merchandise. The "Z" class wagons are 50 ft. in length and have three doors on each side to facilitate rapid loading and unloading. Many of the additional 80 wagons of this type to be built for service in both the North and the South Islands are expected to enter service this year.

#### Cook Strait Ferry

Drawings and specifications for the Railways Department Cook Strait railroad ferry have been received from the United Kingdom consultants by the Minister of Railways, Mr. M. Moohan. Mr. Moohan said recently that he was delighted with the rapid progress that was being made. He said that he was doing everything possible to ensure that the vessel would be ready for service early in 1962. Tenders for the construction of the ship were now being invited from shipbuilders throughout the world and would close toward the end of May. He hoped to be able to announce the placing of the order soon after that.

#### Record Revenue in 1959-60

The Minister of Railways, Mr. Michael Moohan, has stated that during the financial year ended March 31, the Department's revenue from all sources

rose to a record of £34,936,914. This was an increase of £564,050 compared with the previous year's earnings. Expenditure rose by only £362,742 to a total of £35,500,047, so that the net loss was reduced from £764,441 last year to £563,133 this year. This was achieved despite the fact that salary and wage increases amounting to approximately £800,000 were paid during the year. In addition, the financial improvement was obtained without any increases in either fares or freight charges.

### ANGOLA

#### New Bridge at Catumbela

A new bridge to carry the Benguela Railway was recently finished at Catumbela, seven miles from Lobito in Portuguese Angola. It has been built at a cost of some £75,000 by the Benguela Railway Company under its policy to seek continual improvement to its section of the direct rail route linking the Katanga province of the Belgian Congo and the Copperbelt of Northern Rhodesia with the port of Lobito on the West Coast of Africa. The opening ceremony was performed by the Governor-General of Angola, Dr. Silva Tavares.

The new structure supplements an older bridge which was built in 1905 and was the first to be constructed when the line was built, and its single span of 250 ft. was the longest at that time in Southern Africa. The older bridge, which has carried both road and rail traffic, has now been presented to the State of Angola, by the railway company, for exclusive use of road traffic.

The new bridge, which will be for rail traffic only, is also of a single span, but is slightly longer (280 ft.) than the

original structure. It was designed by Messrs. Freeman, Fox & Partners of London, and the steel was supplied by Sir William Arrol & Co. Ltd.

The bridge superstructure consists of two main trusses constructed mainly of high tensile steel of standard structural quality. The single track 3-ft. 6-in. gauge railway is carried on transverse timber sleepers which are bolted direct to mild-steel welded stringers. The structure is supported on fixed bearings at one end and expansion bearings at the other. Vertical articulation at each end is achieved by the introduction of half knuckle joints of mechanite cast-iron.

### RHODESIA

#### Tank Wagons for Crude Tar

Commencing early in June, Rhodesia Railways will allocate tank wagons for the transport of crude tar. The output of tar from the new coke ovens at Risco is estimated at 3,000 gal. a day and it will go by rail from Gado, near Que Que, to Wankie Colliery for refining. Concurrent with the economic development of the country, Rhodesia Railways has received more demands for facilities for the bulk movement of liquids apart from the usual variety of fuel oils and lubricants. In addition to crude tar the railways have tankers reserved for sulphuric acid, glycerine, tallow, ammonia and molasses, and the last-named for which special road-rail containers have been built.

### WESTERN GERMANY

#### Heavy Traffic via Grossenbrode

Traffic between Germany and Denmark, Sweden, and Norway has increased in the last few years. The steamer service across the Baltic, jointly operated by the German Federal and the Danish State Railways, between Grossenbrode, in Western Germany, and Gedser, in Denmark, was used last summer by 10 express passenger services in each direction, and conveyed 146,000 passengers.

### U.S.S.R.

#### New Stock for Moscow Underground

A new type of coach is being tested on the Moscow underground railway to ensure train speeds of up to 56 m.p.h. At present the average speed is 44 to 47 m.p.h. Mr. I. Fiolkovsky, Chief Engineer of the underground system, has stated that the new coaches will be faster and will have a smoother acceleration. Trains composed of these coaches will be easier to brake, which will ensure a faster approach to the stations. The new coaches will weigh 30 tons instead of 45 tons, thereby reducing power expenditure. Wider doors will reduce the time spent at stations. The coaches will soon go into mass production and the first express train made up of this stock will be running before the end of the year.

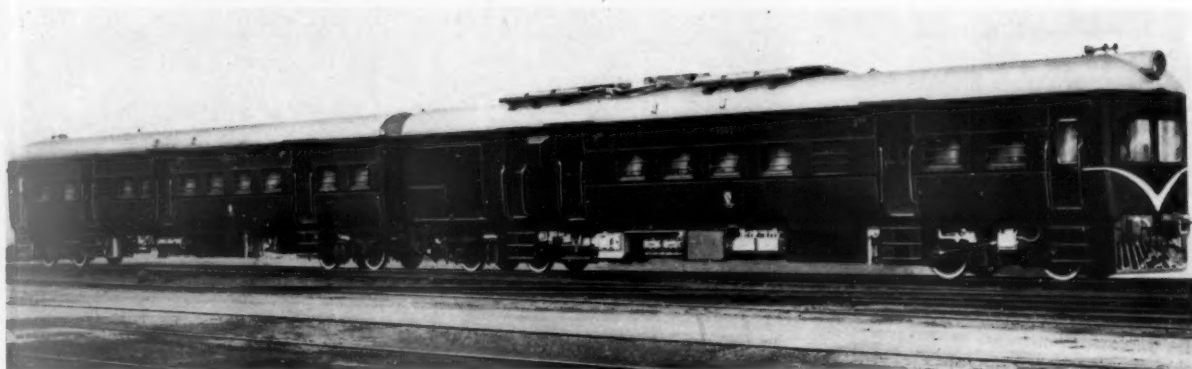


Special train carrying the Governor-General of Angola and guests crossing the new bridge at Catumbela after the opening ceremony



## Twin-Unit Diesel Railcars for Nigeria

*Drewry 400-h.p. multiple-unit cars with automatic gear change and safety and vigilance controls*



*Twin-car 400-h.p. 3-ft. 6-in. gauge diesel train for Nigeria. Note naturally cooled radiators on roof of power car*

**T**WO twin-unit diesel railcar sets, supplied by the Drewry Car Co. Ltd. in conjunction with its associates the Birmingham Railway Carriage & Wagon Co. Ltd., are in course of shipment to the Nigerian Railway Corporation. Each set has accommodation for 139 third class and nine second class passengers and is made up of one power car and one trailer car. Provision is made for multiple-unit working in trains of up to four twin units. The railcars will operate initially on the 80-mile route between Zaria and Kano in Northern Nigeria.

### Driving Simplified

Designed for a maximum speed of 50 m.p.h., each power car is fitted with two B.U.T. six-cylinder underfloor diesel engines rated at 200 b.h.p. at 1,900 r.p.m. Driving, and the training of drivers, has been simplified by the fitting of automatic gear change, and safety provision includes the use of Davies & Metcalfe safety and vigilance control units.

The vehicles were built to the design requirements and inspection of the Crown Agents for Oversea Governments Administrations.

Leading dimensions and data are as follow:—

	ft.	in.
Gauge	3	6
Length over body	60	0
Width over bodyside panels	9	2½
Height over roof panels	12	2
Bogie centres—power car	43	0
Bogie wheelbase—power car	7	6
Bogie centres—trailer car	43	0
Bogie wheelbase—trailer car	6	0
Wheel dia.	2	9½
Minimum curve negotiable	570	0
Weight—power car	35 tons	4 cwt.
Weight—trailer car	25 tons	1 cwt.
Fuel tank capacity	150	gal.
Water tank capacity	105	gal.

The trailer car is divided into two saloons; a small second class saloon fitted with nine seats, and a third class saloon with 74 seats. Third class seating is of the back-to-back type, the tubular-steel frames being fitted with timber-slatted back rests and upholstered seats covered in brown Vynide.

Seating in the second class saloon is of the individual armchair type with deep

latex foam cushions and squabs covered in Vynide. The walls of this compartment are lined with S.G. walnut glossy Formica-faced plywood and the ceiling with matt finish polar white panels. The parcel racks are of tubular aluminium alloy, with a reeded aluminium protection strip at the rear. Windows are of the fully-balanced lift-type, with neutral tinted glass, and aluminium louvres on the outside.

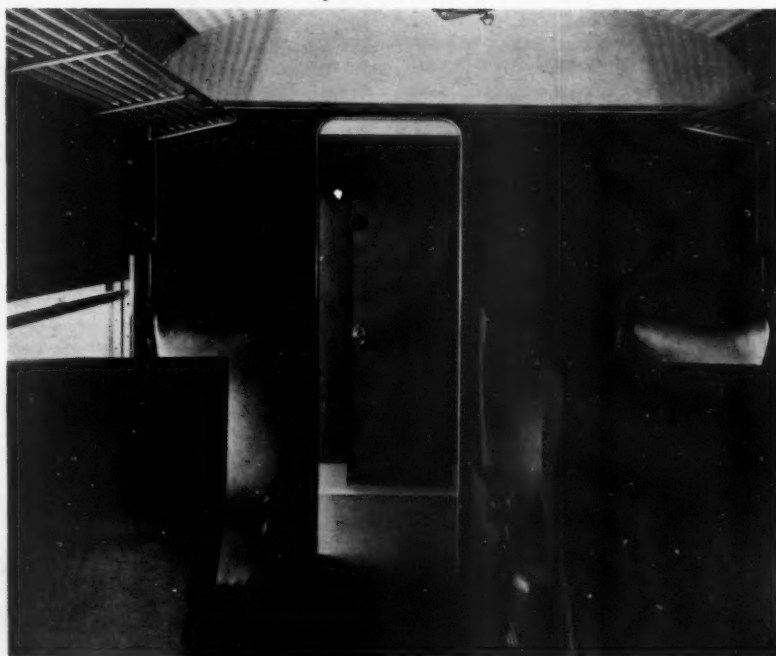
Four twin ceiling lights are fitted over the seats and three 12-in. ceiling fans in the centre. The blockboard partitions forming the vestibule are faced in walnut matt Formica.

The second and third class saloons are separated by a pair of toilets accessible

from the respective saloons. Each toilet is lined with stainless steel sheet and Formica-faced matt polar white ceilings.

### Saloon Flooring and Walls

The floor of the second class is laid in mottled waterproof Terrago. In the third class the floor is an aluminium-alloy casting which embodies the latrine. A water dispenser for the saloon is recessed into the toilet wall. The walls of the third class saloon are Formica-faced in glossy red mahogany and the ceilings matt polar white. The vestibules are painted to match the red mahogany in the saloon. There are strong timber-slatted luggage racks. Roof lights are positioned over the seating. Air cir-



*Individual armchair-type seating, Vynide covered, in second class saloon*

culation is by four 16-in. ceiling fans.

The flooring of both cars is supported on dovetail section aluminium sheets, with a covering of fitted cork slabs and brown linoleum. In the guard and luggage compartments and cabs the floor is covered with tongued-and-grooved hardboard.

#### Accommodation in Power Car

The power car accommodates 65 third class passengers and has an entrance vestibule at each end of the saloon. The toilet is at the forward end and the guard and luggage compartment at the rear. Blockboard is used for the partitions forming the vestibules, a hardwood plinth being incorporated in the base to

prevent seepage of cleaning water.

In the rear vestibule are two vertical ducts enclosing the air-intake pipes for the engine and the cooling-water pipes connected to the roof radiators.

The luggage compartment has a distributed load capacity of two tons. Hinged shelves are fitted at each end. The compartment, which is timber lined, is painted chocolate from floor to waist and bathstone from waist to cantrail. Chequer dumping plate is laid inside the sliding doors. Bell code signals are used between the driver and guard.

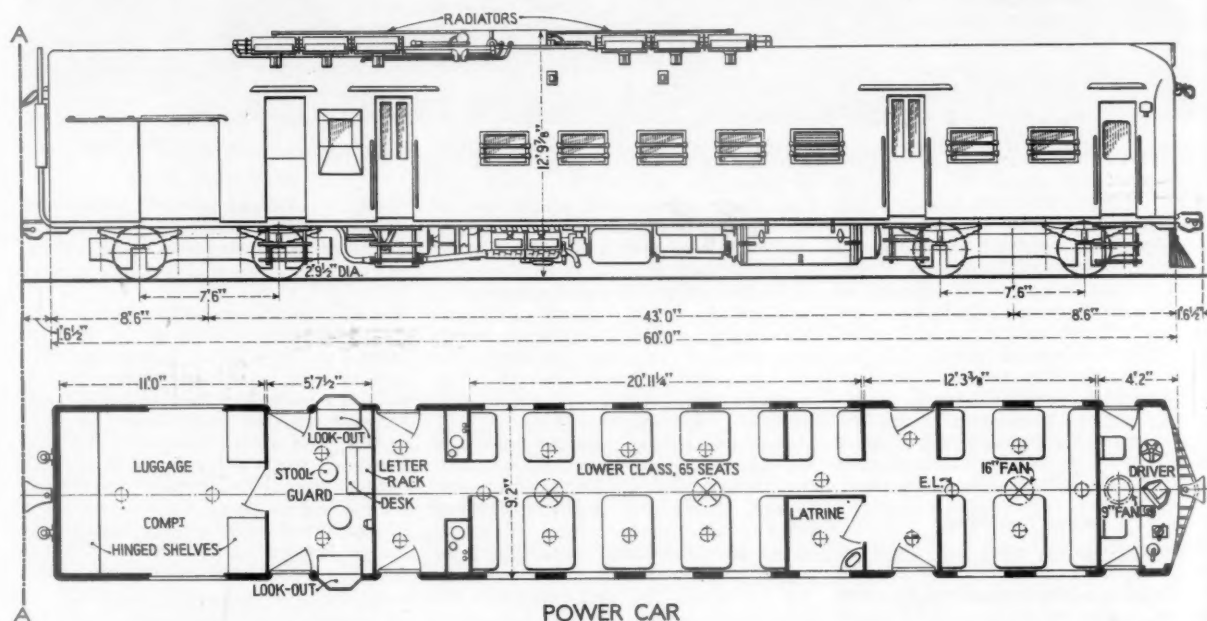
The driving cab layout and equipment are generally similar to multiple-unit railcars on British Railways. The driver's seat is on the right and a second

man's seat on the left; each of the tip-up seats is upholstered and fully adjustable.

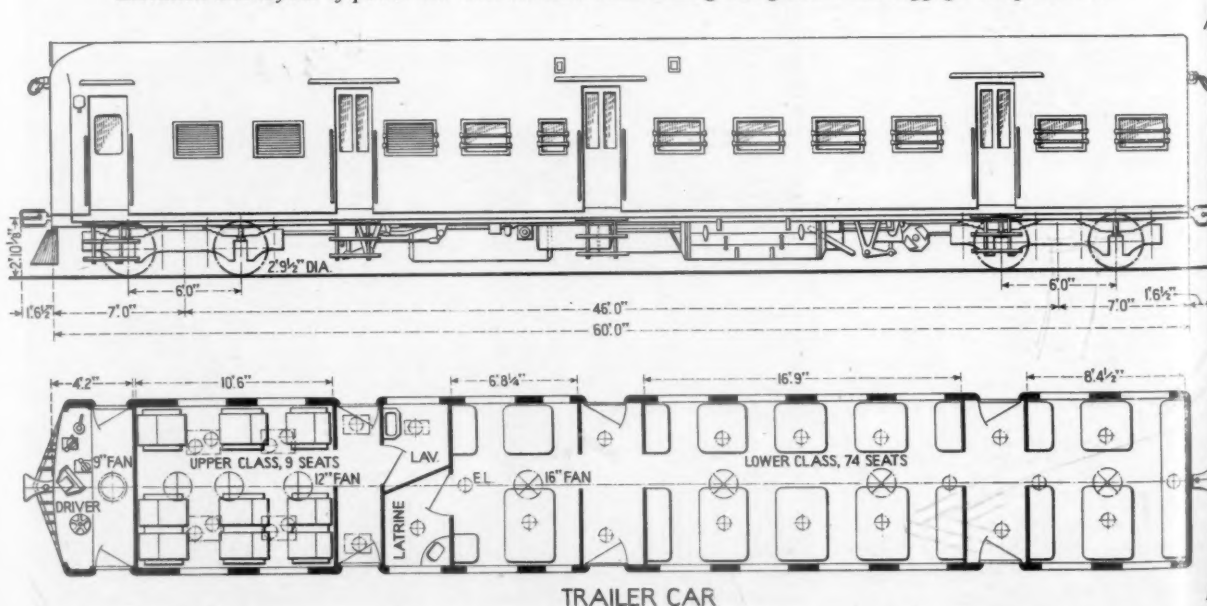
#### Driving Instruments

The driving instruments on the desk include a Hasler speedometer and recorder, and on vertical panels at each side of the desk are the engine instruments and fault indicator lights. A battery-selector switch enables the battery in either the power car or trailer car to be used for control purposes. To facilitate uncoupling, a vacuum brake release valve is provided. There are pneumatic screen wipers and sun visors for the armour-plate-glass driving screens.

Control of the gearboxes is by the



*Elevation and layout of power car with all third class seating and guard's and luggage compartments*



*Elevation and layout of control trailer in twin-car Nigerian Railway Corporation diesel train*





Interior of third class saloon in trailer car, showing slatted seat backs and wide vestibules formed by blockboard partitions

Self-Changing Gears Limited V.S. automatic control. This enables both the tractive effort and the vehicle speed to be controlled by the throttle lever. The state at which gear changes are made is related to both the vehicle speed and the throttle lever position.

The smooth gear change by the automatic control makes possible improved passenger comfort and eliminates the initial high rate of wear on transmissions of vehicles operated by learner drivers. Speed sensing is by a small generator driven by the output shaft on the gearbox, the generator voltage rising as the vehicle speed increases. The voltage signal operates, in conjunction with the throttle lever position, a series of relays, each of which controls an electro-pneumatic valve to perform the required changes of gear in correct sequence.

For convenience of installation and servicing, the e.p. valves are grouped in boxes mounted below the frame and the automatic-control relay panel is mounted below the driving desk of the power car.

Control air pressure is supplied by engine-driven compressors, and suitable interlocks are fitted to prevent control-lever movements until the correct operating pressure is available.

#### Diesel Engines

Each power car has two B.U.T. six-cylinder diesel engines, type RE901, with a site rating of 200 b.h.p. at 1,900 r.p.m. This is a wet liner engine, with a C.A.V. injection pump incorporating an idling and maximum speed governor. Particular attention has been paid to induction air and lubricating-oil filtration. In series with a centrifugal air cleaner mounted on the car roof is a heavy duty oil-bath cleaner mounted on the underframe. Lubricating oil is filtered in a by-pass centrifuge and the oil temperature is controlled by a heat exchanger.

Engine changing is facilitated by the

fitting of built-in lifting gear. This is operated by a detachable crank-handle, the engine being lifted at its centre of gravity to suit the correct installation position. All engines in a multiple-unit train can be started from any driving position, and for servicing, individual engines can be started from local push-button controls. Each engine drives the inner axle of one bogie with final-drive units incorporating air-operated forward and reverse gears.

#### Roof-mounted Radiators

A feature of the engine cooling system is the use of naturally cooled radiators mounted on the power car roof. This system, which has been used by the Drewry Car Co. Ltd., on a number of overseas applications, eliminates the fan power loss and drive maintenance, and improves engine accessibility. The panels are mounted horizontally, there being separate banks for each power unit. Filling is by pressurised hose at underframe level.

The body and underframe form an integral structure with the body and roof structure assembled by electric welding and riveted to the underframe. The roof panels, bodysides, and end panels are in 16g. steel sheet. Between the waist and cantrail the body is lined with Insulwood for noise and heat-insulation. Roof-insulation is by a double blanket of asbestos. The welded underframe is made up of rolled channel sections and channel section headstocks. A.B.C. central buffer couplings and drawgear are fitted.

The bogies, fitted with Hoffman roller-bearing axle boxes, are of the Timmis pattern as used on Nigerian Railway coaching stock. On the power-car bogies the axleboxes incorporate ball location bearings instead of thrust pads. The vacuum brake equipment is the quick release Gresham & Craven A.I.V. type,

fitted with Gresham Dabeg slack adjusters. Brake release with this system is independent of the exhaustor speed as the cylinders are evacuated by a separate high vacuum release chamber. Clasp brakes are fitted on the power car. Reservoir vacuum is maintained by two Clayton rotary exhaustors belt driven from the input shaft of the gearbox.

#### Safety and Vigilance Control

Each power car is fitted with the Oerlikon safety and vigilance control manufactured by Davies & Metcalfe Limited. The vigilance unit ensures, by the sounding of a buzzer, that the driver remains alert at all times. Driven from the axlebox, the mechanism operates on a distance-run basis, and if no driving controls are operated the buzzer sounds when the train has travelled 1,980 yd. The driver cancels this warning signal by making any movement of the throttle controller or by a partial vacuum brake application. This action resets the vigilance unit, and the warning cycle is repeated. Should the signal not be cancelled before the train has travelled a further 220 yd. the engines are stopped and the brakes applied.

During the vigilance cycle period normal movements of the driving controls reset the unit back to the start position. With the deadman handle released the buzzer sounds within 40 yd. travel and an emergency brake application is made in 110 yd. When running in multiple all safety control units are interconnected in the operative position.

The trailer car is fitted with the Corporation's standard Alconum double battery of 175 A. hr. capacity, and the power car a single Alconum 410 A. hr. battery. Charging is by Stones Tonum 100-A. generators, belt-driven from the gearbox output shaft on the power car and from the inner axle on the trailer car.

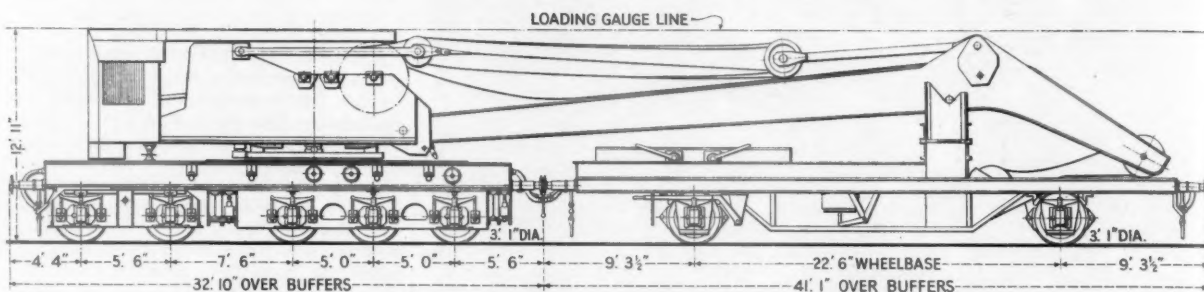
Fuel oil is carried in two frame-mounted 75-gal. tanks. Gravier fire-protection equipment is installed.

Sub-contractors include the following:—

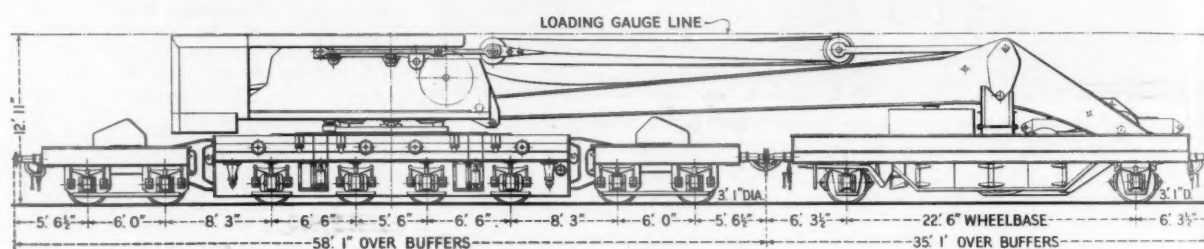
Engines ...	British United Traction Limited
Final drives	
Control equipment	
Gearboxes and V.S. control	Self Changing Gears Limited
Radiators ...	Spiral Tube & Components Co. Ltd.
Brakes ...	Gresham & Craven Limited
Drawgear ...	A.B.C. Coupler & Engineering Co. Ltd.
Wheels and Axles ...	Owen & Dyson Limited
Axleboxes ...	Hoffman Manufacturing Co. Ltd.
Springs ...	Turton Brothers & Matthews Limited
	Jonas Woodhead & Sons Ltd.
	Wj lford & Co. Ltd.
Electrical equipment	J. Stone & Co. (Deptford) Ltd.
Window equipment	Georges Klein et Cie.
	Beckett, Laycock & Watkinson Limited
	Rawlins Manufacturing Co. Ltd.
Screen wipers ...	Trico Folberth Limited
Safety and vigilance equipment	Davies & Metcalfe Limited
Seating ...	A. W. Chapman Limited
	Accles & Pollock Limited
	Auster Limited
Formica panels ...	Formica Limited
Fire protection equipment	Graviner Manufacturing Co. Ltd.
	Nu-Swift Limited
Parcel racks ...	George Gibbons & Co. Ltd.
Instruments ...	Smiths Industrial Instruments Limited
	Hasler Telegraph Works Limited
	Negretti & Zambra Limited
	Sangamo & Weston Limited

## Breakdown Cranes for British Railways

*New order comprises twelve 75-ton and ten 30-ton capacity machines for use in emergencies*



*Side elevation of Cowans Sheldon 30-ton diesel railway breakdown crane*



*Side elevation of Cowans Sheldon 75-ton diesel railway breakdown crane*

AS part of the modernisation programme, the British Transport Commission has ordered 22 railway travelling breakdown cranes for British Railways. These are required for lifting heavy equipment, including electric or diesel locomotives, in emergencies.

Twelve of the new cranes, which are for main-line use, are of a new 75-ton design which possesses greater lifting capacity than that of any other type of railway breakdown crane in Britain. The remainder, capable of lifting up to 30 tons, have been designed to work on both main and branch lines.

### Diesel Power

Four of the cranes, two of each capacity, are driven by diesel engines with hydraulic transmissions, and are the first diesel-powered breakdown cranes to be built for use in this country. The rest have conventional steam engines. The first of the new cranes is expected to be delivered at the end of 1960.

All the cranes are able to move at slow speeds under their own power, and are capable of lifting, slewing, and derricking operations. They have separate haulage winches for dragging aside debris, and the 75-ton type has an auxiliary hoist unit for lifts of up to ten tons. Outriggers and jacks are supplied for use when heavy loads are lifted or when the cranes are working at extended radii. Match wagons support the jib when travelling in train formation between locations, and roller-bearing axleboxes permit speeds of up to 60 m.p.h. Separate diesel-driven generators supply electric power for floodlights and power tools

The 30-ton type is mounted on a five-axle undercarriage; three of the axles are mounted on the main undercarriage frame and two are mounted in a bogie pivoted at one end of the frame. When the crane is moved under its own power, two centre axles are driven through a train of gears; these can be disengaged when the crane is to be hauled by a locomotive.

The 75-ton type has a four-axle undercarriage with two axles driven by a train of gears as in the 30-ton cranes; detachable four-wheel load-relieving bogies are used at each end and when travelling in train formation to reduce the axle-loads.

The 22 cranes are being designed and built to the requirements of the Chief Mechanical Engineer, British Railways Central Staff, British Transport Commission, by Cowans, Sheldon & Co. Ltd., of St. Nicholas Works, Carlisle. Their intended distribution throughout British Railways is as follows:—

Region	75-ton Capacity	30-ton Capacity
Eastern Region ...	2	—
London Midland Region ...	3	6
North Eastern Region ...	2	—
Scottish Region ...	1	—
Southern Region ...	2*	2*
Western Region ...	2	2
<b>TOTAL</b>	<b>12</b>	<b>10</b>

\* Diesel-engined cranes.

Technical details as follows:—

### 75-ton Diesel Breakdown Cranes

Total weight ...	120 tons (approx.)
Total length of crane undercarriage and relieving bogies	58 ft. 1 in.

Wheel base ...	16 ft. 6 in.
Length of jib wagon ...	35 ft. 1 in.
Max. axle-load when travelling in train ...	Not exceeding 17 tons
Wheel dia. ...	3 ft. 1 in.
Propping beams—max. centre of jacks ...	17 ft. 6 in.
Tail radius ...	17 ft.
Length of jib ...	49 ft.
Max. rad. of hook ...	40 ft.
Min. rad. of hook ...	18 ft.
Height of hook throughout jib range ...	37 ft. above rail level to 30 ft. below rail level

### Capacities

Blocked up—outriggers fully extended	Level Rails tons
18 ft. rad. ...	75
20 ft. rad. ...	65
25 ft. rad. ...	40
30 ft. rad. ...	30
35 ft. rad. ...	20
40 ft. rad. ...	15
Crane Free on Rail	
18 ft. rad. ...	12
20 ft. rad. ...	10
25 ft. rad. ...	6½
30 ft. rad. ...	4
35 ft. rad. ...	2½
40 ft. rad. ...	1

### Speeds

Main hoist ...	75 tons at 10 ft. per min.
Auxiliary hoist ...	12 tons at 45 ft. per min.
Hauling ...	6 tons pull at 90 ft. per min. on single part when reeved for hauling purposes
Slewing ...	1 rev. in 2 min. (max. load)
Derricking ...	Running height to 18 ft. in 2½ min. Rated loads from max. to min. radius at about 15 ft. per min.
Travelling ...	300 ft. per min. with 12-ton load on level track

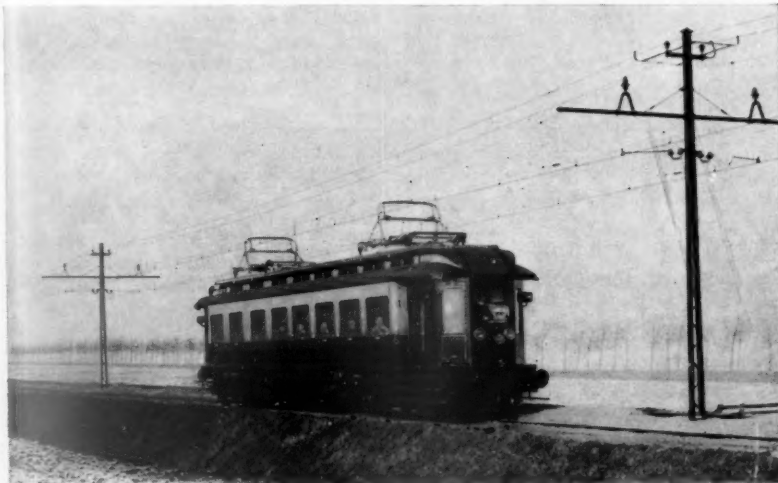
(Continued on page 630)



## Traction on the Netherlands Railways

*Some factors in, and results from, the abolition of steam traction and its replacement by electric and diesel motive power*

*By J. P. Koster, General Manager*



*First electric motor-coach on what is now the Netherlands Railways, 1908: the overhead current is 10 kV, 25 cycles single-phase*

ON October 1, 1908, the first electric main-line service in the Netherlands was opened on the line Rotterdam-The Hague-Scheveningen. Fifty years later, in January, 1958, the Netherlands became the first country in the world to abandon completely steam traction on its public railways, and the last steam locomotive was pushed into the Railway Museum at Utrecht after a historic journey from the locomotive repair shops at Tilburg.

In that same year, 1958, electric traction began on the line Alkmaar-den Helder, as the last section of the modernisation programme of the system to be carried out following the period of rehabilitation after 1945. With this last section a total of 51 per cent of the system was electrified; on the remaining sections diesel-traction was in use.

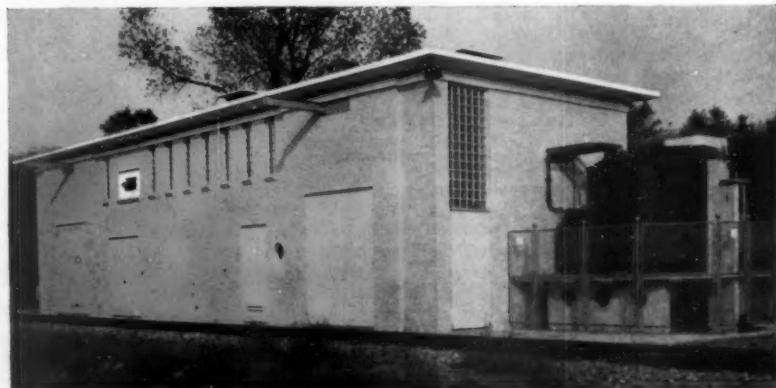
To determine what means of traction are most suitable on any railway system a great number of factors have to be considered. A situation where steam-traction is to be preferred is hardly imaginable, neither from a technical or operational point of view, nor yet financially. There remain to be considered electric traction and traction using internal-combustion engines as prime movers. On the Netherlands Railways the choice was electric traction at 1,500 V. d.c. (after an initial period where single-phase a.c. 25-cycle 10 kV. was used), and diesel-traction on the non-electrified lines.

### Standardised Electric Units

In the beginning electric traction was used for passenger service exclusively. Rolling stock consisted of separate motor-coaches and trailers equipped for multiple-unit operation. About 1930 a new type of rolling stock was introduced, the so-called streamlined train-sets con-

sisting of 2, 3, 4 or 5 coaches permanently coupled together and equipped with automatic couplers at each end. Later this type of train-set was standardised in twin-car and four-car units, the traction equipment of a four-car unit consisting of two identical twin-car equipments.

The use of electric locomotives for hauling freight trains was never thought of until during the war, when coal shortage induced the working of freight trains with two or three motor-coaches coupled together and ballasted with sand to increase adhesive weight. The advantages were obvious, and before the end of the war an order for a number of electric locomotives was placed with Swiss industry. The first electric locomotive to run on the system was an English locomotive, No. 6000, of the London & North Eastern Railway, nicknamed *Tommy*, which acquired quite a reputation among the drivers.



*Rectifier substation, of 10 kV. three-phase input and 1,500-V. d.c. output*

Railcars using petrol engines were introduced as early as 1920, but large-scale diesel-electric operation started only in 1930 after the example of the *Flying Hamburger* in Germany.

### First Diesel Locomotive

The first diesel-electric locomotive was put in operation in 1927. This was a unit of limited performance meant for shunting of goods wagons on small stations along a main line. The design was a great success, and at present about 150 units of this type are in operation. After the war larger units were introduced for shunting and main-line service.

Up to 1931 electric traction was limited to the line Amsterdam-Haarlem-Leiden-The Hague-Rotterdam; but from then on steam traction on the other lines was gradually replaced by diesel traction, which, in its turn as traffic increased, was pushed to lines with lighter traffic while electrification was extended.

Gradually the density on the electrified lines grew to such an extent that goods trains had to be operated mainly during the night. Electric locomotives for this purpose were used for long-distance passenger trains during the day. To avoid electric locomotives standing idle their number was determined by this passenger service. The shortage during the night for freight operation was filled up with diesel locomotives which could operate goods trains on secondary lines during the day.

Summing up, the situation at present is as follows: on electrified lines during the day passenger services mainly by multiple-unit train-sets; a limited number of long-distance passenger trains are hauled by electric locomotives which are used for handling goods trains during the night; on non-electrified lines passenger service is by diesel-electric train-sets exclusively; goods trains on these lines are worked by diesel-electric locomotives during the day, and at night these

locomotives assist freight hauling also on electrified lines. These diesel locomotives are equipped for multiple-unit operation and can be coupled together up to three units of 1,000 h.p. and operated by one man.

#### Electric Traction

Of the total route-length of the system of roughly 2,000 miles, just over 1,000 miles are now electrified. In 1908 the large amounts of power required for traction led to the choice of an a.c. system, viz. 25 cycles 10 kV. The

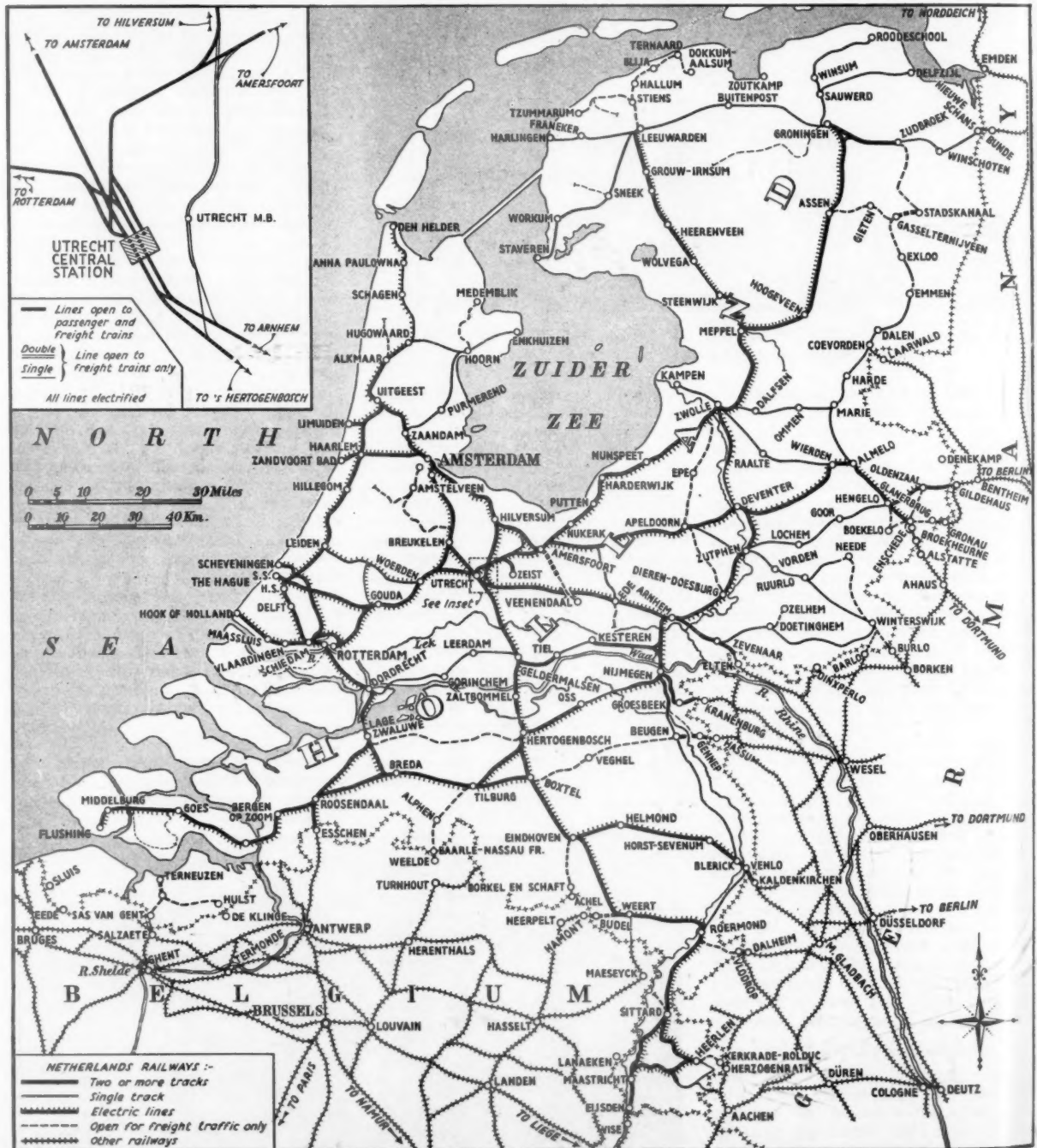
advantages of electric operation became rapidly evident, but technically this system proved to be far from a success. When extension of the electric operation was considered other systems were studied, and finally 1,500 V. d.c. was chosen.

When the first section of line equipped with this system was put into service the existing system was converted to d.c. at the same time. It is a remarkable fact that the reasons for this choice at that time were based exclusively on considerations of technical reliability of the

equipment, no mention being made of any economic consequence.

A third occasion for choice of system presented itself after World War II when most of the fixed installations, as well as the rolling stock, was destroyed. If ever, a change of system could have been carried out at that moment. After renewed serious studies it was decided, however, to maintain the system of 1,500 V. d.c. for reasons which were this time entirely based on financial and operational considerations, namely:—

(1) Relatively low first costs for stock



*Netherlands Railways, showing the predominance of electrified lines*

- (2) Low maintenance costs for rolling stock as well as for fixed installations
- (3) Simple energy supply and conversion from public supply systems
- (4) Possibility to use multiple-unit rolling stock to a great extent
- (5) Maximum reliability both of rolling stock and fixed installations
- (6) Possibility to carry out maintenance of fixed installations without interrupting train service.

In spite of certain disadvantages of this d.c. system the results obtained up to the present are quite satisfactory.

#### Supply of Energy

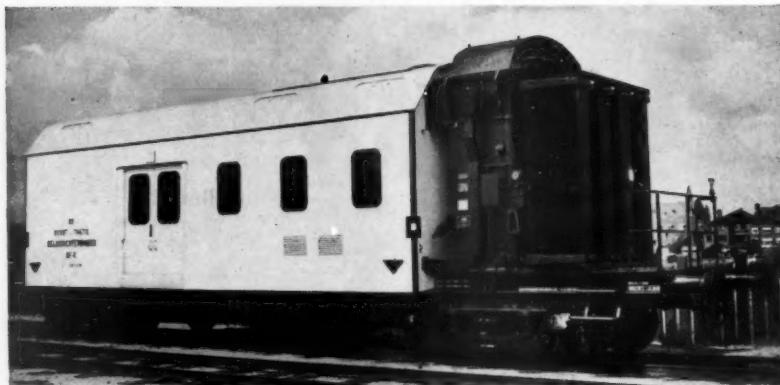
With regard to reliability of energy supply, long deliberations took place in the early twenties on the question whether the railways should be independent in this respect or whether they could rely on public supply systems. In the end the Minister of Transport and Energy decided in favour of the latter, and from then on (1921) the railways were not allowed to generate electricity for traction purposes themselves but had to apply to public undertakings. The existing generating station owned by the railways was put out of service, and was later converted into a car shed.

Electricity generation and distribution in the Netherlands is entirely in the hands of provincial and municipal authorities, which operate their undertakings with great autonomy. This situation may have its advantages for the public; it certainly offers not a few difficulties with regard to electricity supply for traction. The fact that the railways have to deal with a great many mutually independent suppliers takes a lot of negotiation, whereas the total load factor of traction consumption is influenced to its disadvantage as each supplier calculates and values the load factor on his own system individually. For this reason the price of the electricity is high, even allowing for the fact that it is generated in thermal power stations exclusively.

#### Standardised Substation Equipment

On the other hand the public distribution systems are well laid out and it is possible to obtain energy at 10-kV. three-phase in sufficient quantity at any place in the country within a radius of about five miles. This situation has the advantage that substations can always be erected at places which are most convenient for the railways and, that three-phase high-tension equipment and auxiliaries can be standardised. Excepted only are the substations around Rotterdam, where three-phase supply is at 25 kV.

Electric energy is supplied to the railways at the 10-kV. bars of generating or transformer stations. Starting from this point all installations are erected, owned and operated by the railways. The energy is carried to the substations mostly by two cables in parallel and converted into 1,500 V. d.c. by mercury-arc rectifiers. Performance of the latter in regard to nominal as well as overload capacity is standardised. Their total number at present is 164, divided among 85 substations and seven rectifier cars or mobile substations. All rectifier



*Mobile rectifier substation, one of several used as reserve and emergency sets*

groups are remote controlled. Substation equipment as well as buildings are standardised as much as practicable. Spare and stand-by rectifier capacity is made mobile, thus reducing the number of necessary spare units. The capacity per unit is relatively small, so that the loss of power is but slight if a rectifier failure occurs, which happens very rarely.

#### Automatic Remote Control

The principle of feeding a double-track line is that the operation of the rectifier equipments in the substations is automatic in such a way that the simple connection of a rectifier transformer to the 10-kV. bar (by remote control), automatically brings alive the overhead line over a distance of 14 km. (8½ miles) each side of the substation after the insulation of the line has been automatically tested. Remote control of substations, track-sectioning cabins, overhead switches, and so on, is being centralised. Four central control stations are already in operation; the fifth and last is to be installed in the near future.

The normal construction for supporting the overhead lines is a portal built up of three I-section steel beams. Underneath the tracks the legs are connected with old rails to prevent the foundation blocks sagging sideways. On some lines

concrete constructions were used. Both pre-stressed and centrifugally-cast masts are to be found, but the standard steel construction is preferred. For bridging larger numbers of tracks welded constructions are used, supported by masts of a heavier section.

Electric rolling stock consists of about 1,300 coaches of multiple-unit train-sets and 110 locomotives. The latter are for the greater part multi-purpose locomotives of the Bo-Bo type, the remainder being heavier locomotives on two three-axle bogies. A few 1A-Bo-A1 locomotives are considered obsolete, but can not yet be replaced.

Furthermore, a number of old motor-coaches of 1924 design have been converted into self-propelled mail vans to relieve passenger service from loss of time caused by loading and unloading of mail and parcels. These motor vans are also capable of hauling up to about 200 tons of freight cars at speeds which make it possible to run them in between passenger trains.

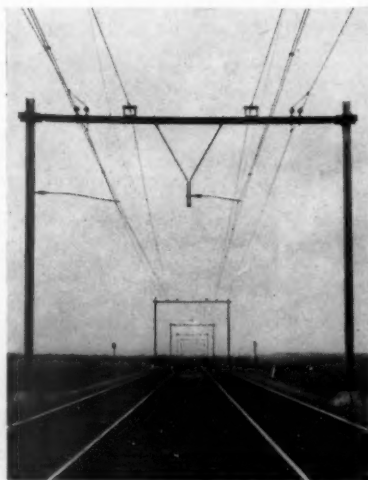
Finally a number of dual-voltage twin-car train-sets have been built in co-operation with the Belgian State Railways for both 3,000 and 1,500 V. operation on the Amsterdam-Brussels route. Right from the opening of this service in 1957 operation has been very satisfactory.

#### Diesel Traction

After a period of experiments prior to the war with different kinds of transmission, it was found that on the Netherlands Railways electric transmission was to be preferred, and all diesel vehicles have been equipped accordingly, even the small shunting loco-tractors of 72 h.p. capacity already mentioned.

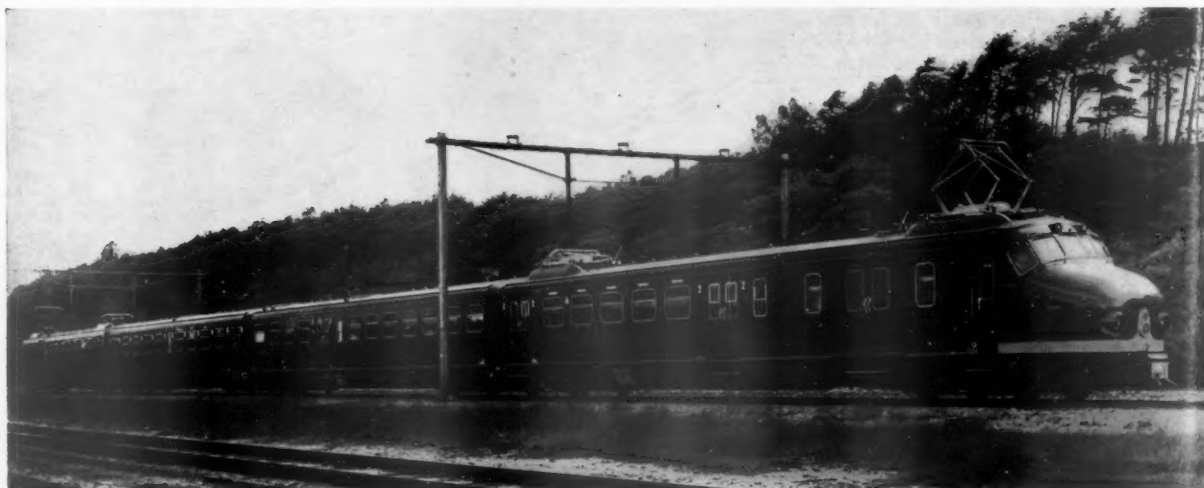
Larger locomotives for shunting were purchased after 1945, mainly for operation in the large shunting yards and on the quays of Rotterdam and Amsterdam harbours.

All shunting work on electrified and non-electrified sections is carried out by diesel locomotives. For this reason, in principle only the arrival and departure tracks in yards are equipped with overhead lines. In the first instance this practice was a result of the fact that it is not practicable to provide industrial sidings with overhead lines. A second



*Present standard overhead line structure with steel masts*





*Latest design of Werkspoor-built four-car multiple-unit train set for the 1,500-V. d.c. lines*

advantage is that locomotives working trains on main lines are freed from doing shunting work on the stations.

In some cases installation of radio receivers and transmitters has reduced the number of shunting locomotives required in concentrated areas.

#### **Bo-Bo Diesel Locomotives**

The first diesel locomotives for main-line service were acquired after the war. After the introduction of one or two experimental types, which have been scrapped since, two relatively important series of different makes were purchased, both Bo-Bo types and both with a capacity of 900–1,000 h.p., weighing respectively 60 and 72 tons. Among themselves the locomotives of each make can be coupled in multiple-unit up to three units, to be operated by one driver.

As a rule it is not necessary to couple more than two units together, and most of the trains are light enough to be worked by one unit. This practice proved to be rather successful, in that a heavy train which is to be split up at a certain point and which is handled by two units in multiple can continue its journey in two parts, each worked by one of the units.

The first three-car diesel-electric pas-

senger units were put into service in 1934. Great technical difficulties occurred right at the beginning, but after a few years of teething troubles the service was developed into a fast and very reliable one. The war put a stop to further development, but after 1945 this type of traction was rapidly developed to replace steam completely in the end. The improvement of the services rendered to the public by introducing new diesel-electric rolling stock often led to increases of receipts from small stations of 200–400 per cent. After the war also a number of twin-car and single-car sets were introduced with the entire traction equipment mounted under the floor. Intervals of 300,000 miles and more are now obtained between overhaul of the engines. A batch of 15 further three-car diesel units, equipped with the same engine as used in the Dutch-Swiss T.E.E. trains, is under construction at present. These units will be used to deal with the greatly increased traffic on the non-electrified lines.

#### **Maintenance**

After the war maintenance both of fixed installations and rolling stock was thoroughly studied, and then reorganised.

Standardisation and simplification of materials and equipment made it possible to reduce the number of personnel for maintenance of overhead line, substations, and so on, to less than 50 per cent, including operating personnel which could be reduced by centralised remote control. Standardisation and simplification also helped to reduce instruction hours for personnel, and stocks of spare parts and materials could be limited to a minimum both in regard to quantity and variety.

Maintenance of rolling stock in general consists of so-called daily maintenance and of major overhauls. Overhauls are carried out in main workshops of which there are three: one for passenger cars, one for freight cars, and one for locomotives. Daily maintenance is concentrated in seven car sheds. It is effected on all rolling stock in such a way that in general each shed has to deal with only one or two types of vehicle. Depending on the type of vehicle and the service it has to perform, the cycle for this kind of maintenance is from 16 days to about four weeks. The sheds are practically all newly built; steam locomotive depots were pulled down.

The principle of the organisation of this maintenance is to give it a preventive character; failures must not be repaired but must be prevented. In the sheds no repair work is done. The work here consists mainly of thoroughly checking every part and replacing worn and suspected parts. Weak spots are detected by statistics and can thus be remedied quickly.

Defective parts are sent to the corresponding main workshop, which sends back to the shed immediately upon receiving these parts an equal number of new or repaired parts for replacement. Each shed has a standard set of parts to bridge time gaps.

In the main workshops the rolling stock is overhauled according to a pre-determined programme which is laid out for each type of vehicle separately. Here, again, the all-important point is thorough checking of each operation. Thus it has proved to be possible to increase the



*A Co-Co electric locomotive of Class "1300" hauling a heavy main-line freight train*

performance of rolling stock still further and to reduce maintenance costs at the same time.

### Operating Results

It will be clear that the above is only a brief outline of the present situation and of the history which preceded it. It may serve, however, as a basis for a better understanding of what follows on results and outlook of the procedure. Right here it may be stated that it is difficult to show in any exactitude, either in figures or particularly in costs, the economies obtained by modernisation or conversion of the traction system of a railway, as it is often not possible to compare two or more systems under exactly identical circumstances. Furthermore a new traction system may make it possible to increase the capacity of stations, yards and lines to an extent that would not have been possible with the old system. Improvement of service and timetables combined with modernisation of equipment may lead to better and increased performance, and also to higher operating costs which have to be compensated by higher receipts.

The Netherlands Railways are a limited company with shares owned by the State. Since its founding in 1938 a profit, though often small, has always been shown. The task is to obtain a certain return on the capital provided by the shareholder in free competition with road and water transport. Principally the government does not want to put the railways in a privileged position with regard to their competitors, but the fact should be considered that in the Netherlands, different from the situation in many other countries, the railways are faced with the presence of an extended system of roads and of navigable waterways, the totals being railways 2,000 miles, navigable waterways 4,200 miles, and roads 24,000 miles. The division of the total freight transport among the three branches is as given in Table I.

The competition in goods transport being already very keen, it is still keener in passenger transport because of the



1,000-b.h.p. Bo-Bo diesel-electric 72-ton locomotive for freight haulage and heavy shunting

the introduction of electric and diesel traction. This led in the first place to important reductions of direct costs, and on the other hand the capacity of existing installations such as stations, yards, and so on could be adapted to increased traffic without important capital investments. The latter is of particular influence as, in many cases, it would not have been possible to master with steam traction the enormously increased traffic demand.

These circumstances make it difficult—as already outlined—to compare costs of different traction systems without going into complicated calculations. If costs are calculated of performing with steam traction exclusively the same service as at present with electric and diesel traction (same number of passenger-miles and ton-miles at the same speeds), then the costs for steam traction would be 56 per cent higher than present costs.

### High Cost of Electric Power

Comparison of costs between electric and diesel traction at present is influenced by the abnormally high price of electric

cheaper than electric traction, but that for freight traffic the difference is 36 per cent to the advantage of electric traction. This comparison applies to costs of seat-miles and ton-miles respectively, as shown in Table II.

TABLE II

Comparison of costs of electric and diesel traction

	Passengers (per seat-mile)	Freight (per ton-mile)
Electric traction (actual costs on electrified lines) ...	100	100
Diesel traction (calculated costs on electrified lines) ...	102	105
Diesel traction (actual costs on non-electrified lines) ...	88	136

When viewing these figures it ought to be considered that the type of traffic on the non-electrified lines is completely different from that on electrified lines. Costs of electric traction on non-electrified lines would be at present a multiple of the actual costs. On the other hand it is clear that the difference in costs of electric and diesel traction on the electrified section is not very important at present. But a slight decrease of the price of electrical energy would result immediately in an increase of this difference to the advantage of electric traction.

Also of some importance are the results obtained from the abolition of steam which cannot be expressed directly in costs, such as increase of receipts due to improvement of travelling comfort, reduction of maintenance costs of buildings and structures, more intensive use of existing installations, and decrease of capital costs due to the curtailing of the whole.

### Fuel Economy

For the country the conversion from steam to electricity meant an economy of one million tons of coal annually (4 per cent of total national consumption), which became available for industry and for power generation. The increase in consumption of diesel oil for traction is relatively small because of the high

TABLE I

Division of inland goods transport (1958)

	1,000 tons	%	millions of ton-km.	%
Waterways ... ..	28,194	25.5	3,068	36.5
Roads ... ..	62,225	60.7	2,973	35.3
Railways ... ..	15,343	13.8	2,376	28.2
Total ... ..	110,762	100	8,417	100

rapid development of individual means of transport, such as bicycles, motorised bicycles, motor-cycles and motorcars. As finally the tariffs and fares for both goods and passengers on the railways are limited by the authorities to a fixed maximum, it will be clear that the situation for the railways is not particularly an easy one.

The only way to maintain themselves is for the railways to reduce rigorously and as much as possible their operating costs. One of the most successful measures in this respect proved to be the complete abolition of steam traction and

energy. Since 1936, when decisions were made for large-scale extension of electrification, the price of electricity has increased five times, whereas the price of diesel oil in this same time has only doubled.

Still the costs of diesel traction on the electrified part of the system, under the same circumstances and with the same performance, would be from 2 to 5 per cent higher than electric traction. Comparison of actual costs of traction on the electrified lines with that on non-electrified lines shows that diesel traction for passenger traffic is yet 12 per cent

thermal efficiency of the diesel engine. Further cost-reducing factors are the following:—

- (a) storage of fuel fell away; with steam a quantity equal to three months' consumption had to be kept in stock;
- (b) 25 steam depots, including installations for water and fuel supply could be abandoned; in their place came four new car sheds;
- (c) of the five principal workshops still in operation in 1938 two could be closed down;
- (d) personnel of depots and workshops could be reduced from 6,000 to 3,400 men; locomotive drivers and firemen totalled 4,000; but today 2,700 drivers perform over 100 per cent more.

Only by these economies was it possible to counter increasing costs and general inflation. However, the possibilities of the new traction systems should also be made use of. Results of efforts in this respect, which could be obtained in spite of the small extent of the Netherlands Railways system, are shown by the figures of the annual statistics of the International Union of Railways, as reproduced in Table III.

The number of seats in passenger

vehicles on the Netherlands Railways in 1938 was 160,000; in 1958 this figure was 112,000. The number of passenger-miles in this time, however, increased to

demands. So electrification will eventually have to be extended; and also signalling equipment will have to be further improved and level crossings will

TABLE III

Average number of km. covered annually (1958) per unit

	Electric		Diesel	
	locomotives	m.u. trains	locomotives	m.u. trains
Germany ... ..	129-057	107-966	33-953	122-109
Belgium ... ..	139-000	173-012	93-968	131-371
France ... ..	120-106	80-018	31-982	120-721
Italy ... ..	100-210	135-464	13-968	105-076
Netherlands ... ..	190-525	185-828	40-316	166-146

over 220 per cent of the 1938 figure. These figures, too, show the better use of the rolling stock.

It will be difficult, in spite of the favourable results obtained so far, to keep up also in the future a positive operation result. Already the always-increasing population is forcing the improvement of performances. New settlements are to be erected, and will have to be connected to the railway system. In the end, only electric traction with multiple-unit trains will be able to handle and to master passenger traffic

have to be freed so that the capacity of the installations can be increased. Rolling stock will have to be adapted to this development, and railway operation in Holland will more and more follow the principles of suburban operation. Comfort and reliability must still improve and maintenance costs be reduced. Automatic train control will have to be developed.

Only thus and by sound financial management can the Netherlands Railways continue to be an indispensable and profitable organisation.

### Breakdown Cranes for British Railways

(Concluded from page 624)

Power Unit ...	on gradient of 1 in 40 at about 150 ft. per min.
	Rolls-Royce 4-cylinder vertical in-line super-charged diesel engine, rated 149 b.h.p. at 1,500 r.p.m.
Transmission ...	Rolls-Royce three-stage Hydrokinetic torque converter.

#### 75-ton Steam Breakdown Cranes

Identical with the 75-ton diesel breakdown cranes except that they are powered by two 8-in. bore x 14-in. stroke steam engines operating at a pressure of 150 lb. per sq. in.

#### 30-ton Diesel Breakdown Cranes

Total weight ... ..	65 tons (approx.)
Total length of crane under-carriage ... ..	32 ft. 10 in.
Wheel base ... ..	23 ft.
Length of jib wagon ...	41 ft. 1 in.
Maximum axle-load when travelling in train ...	Not exceeding 12½ tons
Wheel dia. ... ..	3 ft. 1 in.
Propping beams—maximum centre of jacks ... ..	14 ft.
Tail rad. ... ..	14 ft.
Length of jib ... ..	45 ft.
Max. rad. of hook ... ..	40 ft.
Min. rad. of hook ... ..	16 ft.
Height of hook throughout jib range ... ..	36 ft. above rail level to 30 ft. below rail level

#### Capacities

Blocked up—outriggers fully extended	Level Rails
tons	tons
16 ft. rad. ... ..	30
20 ft. rad. ... ..	25
25 ft. rad. ... ..	17½
30 ft. rad. ... ..	13
35 ft. rad. ... ..	10
40 ft. rad. ... ..	8
<b>Crane Free on Rail</b>	
16 ft. rad. ... ..	10
20 ft. rad. ... ..	7
25 ft. rad. ... ..	5

#### Capacities (Continued)

Blocked up—outriggers fully extended	Level Rails
tons	tons
30 ft. rad. ... ..	3½
35 ft. rad. ... ..	2½
40 ft. rad. ... ..	1½
<b>Speeds</b>	
Hoisting ... ..	30 tons at 25 ft. per min.
Hauling ... ..	6 tons at 125 ft. per min.
Slewing ... ..	1 rev. in 1 min. (max. load).
Derricking ... ..	Running height to 16 ft. radius in 2 min. Rated loads from max. to min. rad. at about 15 ft. per min.
Travelling ... ..	300 ft. per min. with 10 tons load on level track 150 ft. per min. up grad. of 1 in 40.
Power Unit ...	Rolls-Royce 4-cylinder vertical in-line super-charged diesel engine, rated 119 b.h.p. at 1,500 r.p.m.
	Rolls-Royce Twin Disc three-stage Hydrokinetic torque converter.

#### 30-ton Breakdown Cranes

Identical with the 30-ton diesel breakdown cranes except that they are powered by two 8-in. bore x 14-in. stroke steam engines operating at a working pressure of 150 lb. per sq. in.

**POLYPENCO LIMITED NEW OFFICE.**—Polypenco Limited, 68-70, Tewin Road, Welwyn Garden City, Herts., has recently established a sales office at 117, Swan Arcade, Bradford, 1; telephone: Bradford 32073. It is under the management of Mr. S. Sharp.

**NEW MARSHALLING YARD AT BESCOT.**—Work has started on a £1,500,000 scheme to remodel completely the marshalling yard at Bescot British Railways, London Midland Region, and this will take about two years to complete. At present, the area between Birmingham, Wolverhampton and Walsall is served by a number of marshalling yards

of varying size including those at Bushbury, Stechford, Wichnor and Birmingham Exchange, all of which will cease to be used for marshalling when the new Bescot yard commences operation. The control tower at Bescot will be equipped for push button sorting, with automatic operation of points and retarding apparatus, and will include staff amenity buildings and new lighting. When completed this yard will be capable of receiving, sorting, and despatching over 3,000 wagons a day.

**INCREASED FARES AND RATES IN SCOTLAND.**—The Scottish Area Board of the British Transport Commission states that the position as to fares in the Scottish Region, British Railways, is that on June 12 fares for journeys up to 200 miles will be increased by about ½d. a mile, second class. From 201 miles upwards the increase will be tapered with no increase for journeys of 275 miles or more. Return fares will still be double the single, and first class roughly 50 per cent over second class fares. Mid-week return fares will not be increased this season. The "Starlight Special" ticket to London will remain at 85s. return. The "Freedom of Scotland" tickets will still be £6 second class and £9 first class. Runabout tickets will remain at the prices already announced, as will circular tour tickets and charges for travel by car/sleeper trains. Early morning return fares in the Scottish Region were increased slightly on May 8. The dates of other adjustments will be announced later. Meanwhile most season tickets in Scotland are unaltered. For the time being there is to be no increase in cheap day return fares, though it may be necessary for them to be adjusted later. Freight charges, in general, are not being increased. From May 15 an increase of approximately 10 per cent will be applied to certain exceptional scales of charges for parcels and other merchandise by passenger train; and an increase of some 10 per cent will be made in the charges for small consignments up to three cwt. by goods train, with lower percentage increases for consignments up to five cwt. and minor adjustments in the charges for higher weights.



## RAILWAY NEWS SECTION

### PERSONAL

Mr. M. K. Kaul, General Manager, Northern Railway of India, is on retirement leave. His duties have been taken over by Mr. B. B. Mathur, General Manager, Western Railway.

Mr. W. Urquhart, C.B.E., B.Sc.(Edin.), M.I.C.E., Deputy General Manager, East African Railways & Harbours, who, as recorded in our May 6 issue, has retired,

City Council in 1946 and 1952 and was President of the East African Association of Engineers in 1948 and 1949. He was awarded the Order of the British Empire in the 1946 New Year's Honours List, and the C.B.E. in the Queen's Birthday Honours List in 1956. Mr. Urquhart intends, for the time being, to spend his retirement at Limuru, Kenya.

Mr. F. R. Stockdill, Chief General Accountant, Finance Department, British

Mr. Pierre Delagrave, Special Assistant to the Vice-President of Traffic, Canadian National Railways, has been appointed General Passenger Traffic Manager. He succeeds the late Mr. J. T. Whiteford.

Mr. G. P. G. Mackay, M.A., Chief Operating Superintendent, East African Railways & Harbours, who, as recorded in our May 13 issue, has been appointed Deputy General Manager, was educated at Huntly Gordon School and Aberdeen University.



**Mr. W. Urquhart**

Deputy General Manager, East African Railways & Harbours, 1954-60



**Mr. G. P. G. Mackay**

Appointed Deputy General Manager, East African Railways & Harbours

was educated at Edinburgh Academy and Edinburgh University. He served his early engineering training with Sir W. G. Armstrong Whitworth & Co. Ltd., and was employed as an Assistant Engineer on construction works in England and Newfoundland. In January, 1926, Mr. Urquhart joined the Uganda Railway as Assistant Engineer and, in 1933, he became Engineer-in-Charge at Mombasa Port. After three years there he worked in both headquarters and various districts, being promoted to District Engineer in 1942 and becoming a Senior District Engineer in 1943. He was New Works Engineer in headquarters from then until his promotion to Assistant Chief Engineer in 1946, and he retained the position on the amalgamation of the Kenya & Uganda and Tanganyika Railways in 1948. He acted as Chief Engineer for lengthy periods from 1946 until his appointment as Chief Engineer, East African Railways & Harbours in April, 1952. He was appointed Deputy General Manager in 1954. Mr. Urquhart was a member of the Nairobi

Transport Commission headquarters, has been appointed Assistant General Manager, London Midland Region, British Railways. Mr. P. G. James, Chief Financial Officer, London Transport Executive, has been appointed Chief Accountant, B.T.C. Mr. H. E. Osborn, at present designated as Chief Accountant & Financial Adviser, will, in future, have the title of Financial Adviser. The Chief Accountant, the Director of Funds & General Division, and the Director of Budgets, will report to him.

Mr. A. M. Todd, District Motive Power Superintendent, Bank Hall, Liverpool, London Midland Region, British Railways, has retired.

Mr. Herbert H. Crow has been appointed Chairman of the Road Haulage Association in succession to Mr. R. N. Ingram who is retiring after two years in that office. Mr. J. B. Mitchell, Mr. D. O. Good, Mr. N. T. O'Reilly and Mr. J. T. Turner, have been elected Vice-Chairmen.

Mr. Mackay had two years' special training with the London & North Eastern Railway before joining the Kenya & Uganda Railways & Harbours as an Assistant Traffic Superintendent in 1941. Early in 1942, after experience in various districts, he was transferred to Headquarters, Nairobi, as Personal Assistant to the then Superintendent of the Line. In 1948 he moved to the General Manager's Office as an Administrative Assistant, and in 1952 became Principal Assistant to the General Manager. He was appointed Chief Operating Superintendent in 1955. Mr. Mackay was awarded a United Nations Fellowship in 1954 for the study of transportation.

Mr. W. C. Hymus, Commissioner of Development, Canadian National Railways, Montreal, 1952-56, has been appointed Special Assistant to the Vice-President at Toronto. He has been Industrial Commissioner, Toronto, since 1956, and is succeeded in that position by Mr. Lawrence MacIsaac, formerly Industrial Engineer, Moncton.



**Mr. M. C. Purbrick**

Appointed District Engineer, Derby North,  
L. M. Region

Mr. M. C. Purbrick, B.Sc.(Eng.)(London), A.M.I.C.E., Assistant District Engineer, Manchester, London Midland Region, British Railways, who, as recorded in our April 29 issue, has been appointed District Engineer, Derby North, joined the Great Western Railway, in 1946, after serving with the Ministry of Aircraft Production. Mr. Purbrick worked as a surveyor and draughtsman in the New Works Office of the Chief Engineer at Paddington, and transferred to the District Engineer's Office, Bristol, three years later. In 1954 he became Assistant to the District Engineer, Plymouth, and the following year moved to a corresponding position at Bristol. Mr. Purbrick was appointed Assistant District Engineer at Cardiff in 1956, and at Manchester in 1959.

Sir Ralf Emerson will join the board of the Provincial Insurance Co. Ltd. on June 1. As recorded in our March 18 issue, his term of office as Chairman, Nigerian Railway Corporation, terminates on May 31.

Mr. J. G. Fisher and Mr. A. S. Ferguson have been appointed Sales Engineers, B.I.C.C.—Burndy Limited.

We regret to record the death on May 15, after a long illness, of Mr. Andrew Foster, Assistant (Trade Advertising), Chief Commercial Manager's Office, London Midland & Scottish Railway, 1932-45. Mr. Foster joined the former London & North Western Railway in 1895 in the General Manager's Department. In 1901 he was transferred to the District Superintendent's Office, Euston, as Claims Clerk. In 1903 he became General Correspondence Clerk and later Claims Clerk in the office of the Superintendent of the Line. In 1919, he was appointed Chief Claims Clerk (Traffic Department) for the whole of the L.N.W.R. In 1925 he was appointed Chief Claims Clerk (Passenger Department), L.M.S.R. He was a member of the Joint Claims Committee of the Associated Railways Companies at the Railway Clearing House, and was twice Chairman of the committee. Mr. Foster was appointed Assistant to Advertising & Publicity Officer, Euston, in 1930. In 1932, he became Trade Advertising Assistant to Passenger Manager, Euston, which position was shortly afterwards redesignated as Assistant (Trade Advertising), Chief Commercial Manager's Office. Mr. Foster retired in June, 1945.

Mr. S. C. Webb, District Commercial Officer, Doncaster, Eastern Region, British Railways, has been appointed Traffic Manager, Doncaster. He succeeds Mr. E. J. Stephens, who has retired.

We regret to record the death on May 24, at the age of 69, of Mr. J. N. Maskelyne, formerly President of the Stephenson Locomotive Society, and a Vice-President of the Historical Model Railway Society.

Mr. H. McGlyn has been appointed Quality Control Engineer at the Brighton factory of West Instruments Limited.

Mr. J. W. Ringrose has been appointed Chief Applications Engineer, Semiconductors Limited.

Mr. W. Newland Williams, has been appointed Sales Manager, Dunedin Engineering Co. Ltd.

Mr. Ian Cameron, General Manager of the Southampton Works, John I. Thornycroft & Co. Ltd., has been appointed to the board of the company.

Mr. A. C. Ball and Mr. A. E. Gilbert have been appointed Directors of Hayward Tyler Limited, a member of the Stone-Platt Industries Group.

Mr. J. R. Davies has been appointed Manager, Crompton Parkinson (Stud Welding) Limited. He succeeds Mr. R. W. Taylor. Mr. Davies was formerly Sales Director, Expert Heat Treatments Limited.

Mr. Rex A. Sebastian has been appointed General Manager, Cummins Engine Co. Ltd., manufacturing plant in Shotts, Lanarkshire, Scotland. He was formerly Director, Purchasing, at the Columbus factory, Indiana, U.S.A.

Mr. L. H. Pomeroy has been appointed Director, Marketing, United Kingdom Operations, Massey-Ferguson (United Kingdom) Limited. He succeeds Mr. T. V. Knox, who has resigned.

Mr. Arnold F. Moseley has been appointed General Sales Manager, Dunlopillo Division, Dunlop Rubber Co. Ltd. He succeeds Mr. George Carr, who was recently appointed Assistant General Manager. Before taking up his new position, Mr. Moseley was Sales Director of Bintex Limited, and will continue to be a Director of that company.

Mr. I. MacLeod-Smith, Sales Director, W. H. Dorman & Co. Ltd., has recently joined Mr. J. W. Whippenny, Joint Managing Director & General Manager, who is now in Canada. They will deal with the expanding activities of the Canadian Associates, Dorman Diesels Canada Limited, Toronto. Mr. MacLeod-Smith will then visit the U.S.A. to carry out intensive market research to present a marketing report to the board of directors. It is expected that the tour will last for several weeks.

Mr. G. A. Rendle, Deputy General Manager, British Insulated Callender's Construction Co. Ltd. has retired. Mr. Rendle joined Callender's Cable & Construction Co. Ltd. in 1920. Between 1930 and 1932 he carried out cable contract for the Central Argentine Railway. Following the formation of British Insulated Callender's Cables Limited, he was appointed Deputy Cable Contracts Manager in 1946. In 1949 he became Cable Contracts Manager, British Insulated Callender's Construction Co. Ltd., and in 1954 Director & Manager, Cable Contracts, in which capacity he continued to act following his appointment four years later as Deputy General Manager.



**Mr. J. Don**

Appointed Road Motor Engineer, York  
North Eastern Region

Mr. J. Don, Road Motor Engineer, Manningham, Bradford, North Eastern Region, British Railways, who, as recorded in our April 22 issue, has been appointed Road Motor Engineer, York, joined the former Great Eastern Railway as an apprentice at Stratford Locomotive Works in 1915. On completion of his apprenticeship, he was transferred to the Road Motor Engineer's Department, and subsequently held positions under the District Road Motor Engineers at Darlington, Nottingham, Norwich, Gateshead and Manchester. In 1949 he was appointed District Road Motor Engineer, Manningham, Bradford. Mr. Don's new appointment is part of the re-organisation, under which road motor engineering comes under the control of Mr. M. G. Burrows, Chief Mechanical & Electrical Engineer, North Eastern Region. The work was previously under the bi-regional control of the Road Motor Engineer, Eastern & North Eastern Regions, Kings Cross.

Mr. Arnold W. Lee, Managing Director, Norton Grinding Wheel Co. Ltd., has been appointed to the board of Behr-Manning Limited.

Sir Ronald L. Prain has relinquished the Chairmanship of the Management Committee of the Copper Development Association, after ten years in that office. He is succeeded by Mr. E. C. Baring.

Mr. N. A. Iliff has been appointed Managing Director, Shell Chemical Co. Ltd., in succession to Mr. I. H. Williams. Mr. Williams is to take up a new executive appointment in the Shell International Chemical Organisation. Mr. John L. Black has been appointed General Manager of the Shell Haven Refinery, Shell Refining Co. Ltd. He succeeds Mr. James Grant, who has retired.

Mr. G. J. Gaunt, Sales Manager, Reliance Telephone Co. Ltd., has been appointed a Director of that company and of Telephone Supplies Limited. Mr. W. T. Ashton has retired after more than 40 years' service from the boards of both companies. Mr. R. V. Doyle has been appointed Manager of the Scottish Area Reliance Telephone Co. Ltd., in place of Mr. H. J. McCusker, who has retired. The companies are subsidiaries of the General Electric Co. Ltd.

## NEW EQUIPMENT AND PROCESSES



### Hydraulic Loader

THE Muir-Hill RD-2 hydraulic loader has been designed as a versatile short-wheelbase rear-wheel drive general-purpose machine for operation on reasonably level ground.

It has a 50-deg. roll-back bucket action combined with a pry-out force of 7,400 lb. Five buckets of  $\frac{3}{4}$ —2 cu. yd. are interchangeable to suit different materials. Each has a wear-resistant blade; teeth can be added to the  $\frac{3}{4}$  and 1 cu. yd. buckets. The maximum travelling speed is 13.3 m.p.h.

The power unit is a Fordson Power Major 3.6-litre four-cylinder diesel engine which develops a maximum of 56 b.h.p. at 1,800 r.p.m. A dry-plate clutch transmits power through a constant-mesh gearbox with six forward and two reverse speeds.

Double-acting rams of  $4\frac{1}{2}$  in. piston dia. operate the tip and reset of the bucket. The main beam lift rams give a tearaway force of more than 6,200 lb. when the bucket is fully rolled back. Hydraulic power is provided by a heavy-duty gear pump driven from the engine crankshaft, with a double selector controlled by grouped twin levers. Operation is smooth and positive.

The height of lift under the lip of the tipped bucket is 11 ft. with 12 ft. 11 in. clearance under the bucket hinge. Maximum outreach is 5 ft. 10 $\frac{1}{2}$  in. The turning circle is only 30 ft. Frame construction is from all-welded rolled-steel channel section. A totally-enclosed driver's cab with cushioned seat is standard equipment. Extras available include power-assisted steering and hydraulic transmission.

Further details may be obtained from the manufacturer, E. Boydell & Co. Ltd., Old Trafford, Manchester, 16.

### Coloured Modules

**YELLOW**, green, red, and blue translucent plastics diffusing modules are now available for ceiling lighting. Further colours will follow according to demand.

A further innovation is the "Highlight" module, available either white or coloured, which carries a recessed spotlight in the centre. This module can be fitted with any type of vertical or directional spotlight up to 100-W. to emphasise a special display or feature. Electrical connections of the spotlights are made in the usual way, with

the added advantage that the leads are concealed behind the translucent modules.

Further details can be obtained from the manufacturer, Luminated Ceilings Limited, Alliance House, Caxton Street, London, S.W.1.

### Premium Grade

**WIMET XL35** is a grade of carbide combining to an unusual extent the characteristics of wear resistance and toughness which has been developed for milling steel. Despite its high hardness of approximately 1,500 V.P.N., it possesses superior resistance to thermal cracking at the cutting edge, a resistance achieved by the selection of correct grain structure. It is especially suitable for all face-, slot-, and end-milling operations on steel. These types of operation cause the greatest thermal shock because the cutting edge of the tool is heated rapidly to a high temperature while cutting and suddenly cooled while passing through air.

It can also be used with advantage on other operations such as intermittent turning where thermal shock is encountered.

In a long testing programme it has been applied to crankshaft milling, milling slots of large and small rotors, and to a wide variety of die block milling, as well as innumerable intermittent turning operations. In all of these, tool life has been considerably extended in comparison with other grades.

Tips supplied in the new grade will carry a premium of 5 per cent.

Further details can be obtained from the manufacturer, Wickman Limited, Coventry.

### Threading Machines

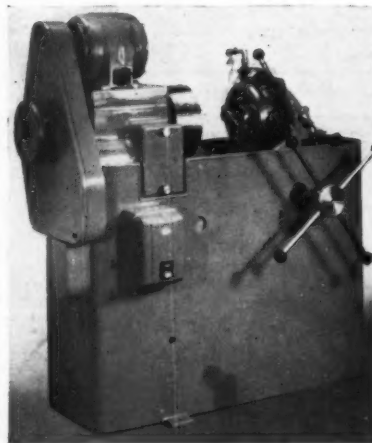
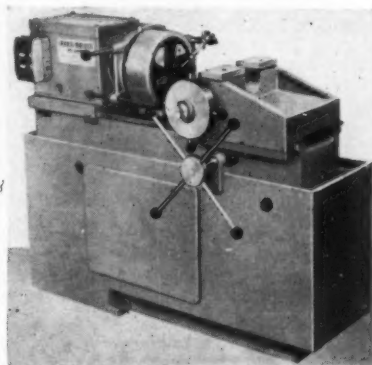
**THREE** threading machines of entirely new design are the Landis-Maiden 1 $\frac{1}{2}$  "MB" production threading machine; the Maiden-Lansta, and the Maiden "IC/ST" machines. The top illustration in the next column shows the Landis-Maiden 1 $\frac{1}{2}$  "MB" production threading machine which, fitted with an all-steel tangential diehead, can handle  $\frac{1}{2}$ -in. to 1 $\frac{1}{2}$ -in. tubes and  $\frac{3}{4}$ -in. to 1 $\frac{1}{2}$ -in. bolts. A pick-off gear headstock allows a choice of eight spindle speeds from 45 to 254 r.p.m. A new type of carriage front is adjustable both vertically and horizontally.

The Maiden-Lansta machine (centre illustration) is fitted with a tangential diehead and can handle  $\frac{1}{2}$ -in. to 2-in. tubes, and  $\frac{1}{2}$ -in. to 2-in. bolts. Designed primarily for maintenance work, the machine has a stationary tangential diehead with cutting-off and reaming attachments all fitted to the saddle. On this machine, the workpiece is rotated. A pick-off gear headstock provides two spindle speeds, 19 and 54 r.p.m. Work is gripped by a three-jaw self-centring chuck at the spindle nose. Of the pedestal type, this machine also is available as a transportable unit.

The Maiden "IC/ST" machine (lower illustration) can handle  $\frac{1}{2}$ -in. to 1-in. tubes,  $\frac{1}{2}$ -in. to 1 $\frac{1}{2}$ -in. conduit, and  $\frac{1}{2}$ -in. to 1 $\frac{1}{2}$ -in. bolts. Fitted with a radial diehead, it is especially suited to general-purpose and maintenance work where medium and small quantities of a variety of threads are required. This is an inexpensive machine covering a wide range of the more popular sizes and types of work. It incorporates a lever release-and-close mechanism which eliminates the need for stopping the machine after production of each thread. Although a taper

threading mechanism is incorporated, the machine is equally suited to the production of parallel threads. Headstock is totally enclosed in an oil bath and there is a narrow guided saddle with inverted rack to prevent damage from cuttings.

Further details of these and the two other machines on exhibition can be obtained from the manufacturer, Landis Machine-Maiden Limited, Maiden Division, Hyde, Cheshire.





## Ministry of Transport Accident Report

West Sleekburn, November 4, 1959 : British Railways, North Eastern Region

Colonel W. P. Reed, Inspecting Officer of Railways, Ministry of Transport, inquired into the collision, at about 7.22 p.m., on November 4, 1959, between two mineral trains at West Sleekburn, between Newcastle-on-Tyne and Newbiggin. An up coal train, without vacuum brakes, which had been accepted under the Warning Arrangement up to its home signal, ran slowly past the signal to collide head-on with a down coal train which was proceeding under clear signals to the Cambois branch line at a good speed. Both engines collapsed, and the driver and fireman of the down train were killed. The driver and fireman of the up train suffered from shock.

It was difficult in the darkness and among the wreckage to find out quickly if anyone was missing. This explains some delay in sending for doctors, who did not arrive until 8.30 p.m., though ambulances had been called promptly. Clearance was hampered by the amount of spilled coal and by the severe damage to the engine and tender of the down train, which could not be towed away. All lines were re-opened to traffic at

down in August, 1959. A temporary block cabin was installed with block instruments, bells, and telephones. Arrangements were made to work the points by hand and to flag trains past the signals. An inspector, or railwayman of equivalent grade, was continuously on duty to supervise this work. A single-lever frame was installed near the cabin to work the down home signal, which is some distance away.

### Rules Covering Working

Acceptance under Regulation 5 ("Section clear but station or junction blocked") is permitted for up trains in clear weather, and when no trains carrying passengers are involved. The rules lay down that if there is a stop signal ahead of the box receiving this acceptance, the signalman may check the train at the stop signal in rear, and then exhibit a green hand signal to warn the driver as he passes the box. The driver acknowledges this hand signal by whistling.

Alternatively, if there is no stop signal ahead, the train must be stopped at the signal in rear, and then brought up to the

Simultaneously he accepted the up train under Regulation 5, and at once received "Train entering section." The down train passed him at 7.22 p.m. at an estimated speed of 25-30 m.p.h., and he then saw it come to a sudden stop. A few minutes later the inspector on duty told him of the collision. He at once sent "Obstruction danger" to Marcheys House and Winning.

This evidence was confirmed by the hand signalman. It was also shown that the down home signal lever had been pulled after the road had been set for the branch, and a yellow light exhibited at the starting signal.

The hand signalman at the up main home signal said he saw the up train travel slowly past the signal, but could not see whether the engine wheels were locked.

The inspector on duty ordered the ambulance and notified District Control after a first quick inspection of the accident. A further inspection showed the crew of the engine of the down train to be missing; and he then, at about 7.45 or 7.50 p.m., ordered doctors to be called. He was not aware of the lengthman's failure to re-set the

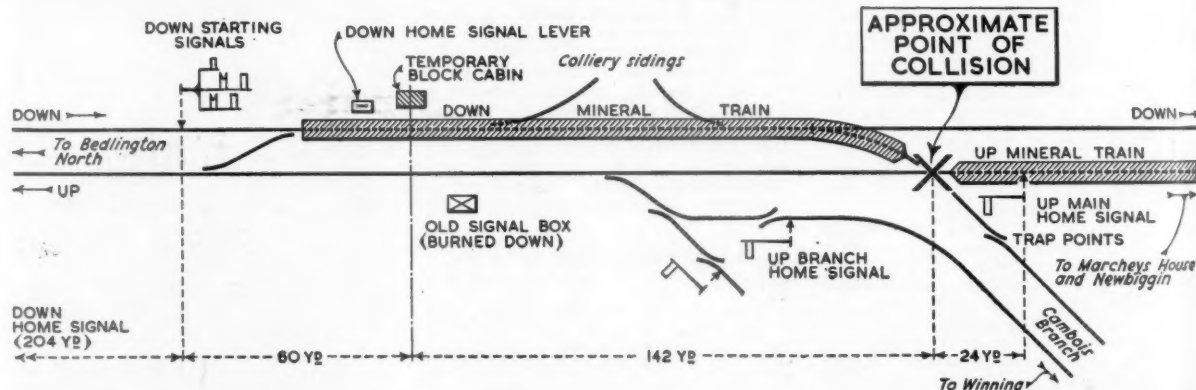


Diagram showing circumstances of accident at West Sleekburn, British Railways, North Eastern Region, on November 4, 1959

restricted speed at 9.50 p.m. the following day. The evening had been fairly fine, but there was a shower of rain shortly before the accident.

Both trains were hauled by Class "5," Type "J-27," 0-6-0 engines with six-wheel tenders, weighing about 78 tons. These engines are equipped with the steam brake, working on all engine and tender wheels and exerting a pressure equal to 78 per cent of the weight. The driver's position is on the right of the cab.

The up train consisted of 22 wagons and a brake van. Its total length was 169 yd., and loaded weight 532 tons. The down train consisted of 24 wagons with a brake van at either end of the train. Its total length was 221 yd., and loaded weight 733 tons.

The layout and relevant distances are shown in the diagram. From Marcheys House the gradient falls at about 1 in 400 for about  $\frac{1}{4}$  mile, then at 1 in 92 $\frac{1}{2}$  over a short distance, and finally easing to 1 in 140 at the junction. It is, however, shown at 1 in 250 in the records. The increase in the gradient is ascribed to subsidence due to coal workings.

On the Cambois branch the gradient rises from West Sleekburn, increasing quickly to a maximum of 1 in 52 before the crest is reached about 230 yd. from the box.

West Sleekburn signalbox was burnt

box where the driver is given a verbal warning. There is no stop signal ahead of Marcheys House box.

The authorised loads for Class "5" engines are the equivalent of 34 standard mineral wagons for down branch trains, and 33 for up main trains. Loaded down trains for the branch must approach the junction at reasonable speed, if they are to get up the bank, and it is recognised that to do this drivers of such trains will stop well short of the down home signal at West Sleekburn, unless they have been given a clear run.

The two locomotives must have met left buffer to left buffer, as the down train was crossing the up train's path. Both turned over on to their right sides. The down train engine was the more severely damaged of the two. The wagons of the up train were intact, but the leading brake van and first six wagons of the down train were either piled up and wrecked or heavily damaged.

### Signalman's Evidence

The West Sleekburn signalman said he accepted the down train at 7.16 p.m. and received "Train entering section" at 7.17 p.m. At the same time he was offered the up train but refused it. He offered the down train to Winning and had it accepted at 7.18 p.m., and then told the hand signalman to set the road and clear the signals.

trap points after the previous down branch train.

The Relief Signalman at Marcheys House admitted that he carried out Regulation 5 in the way permitted only when there was a stop signal in advance of the box. This, he said, was the custom at the box and was thoroughly understood by drivers.

### Evidence of Driver

The driver of the up train said that the guard had told him his load, which was near the limit. He had checked the sanding gear and had used it when starting from Lynmouth. He agreed that he had been warned when passing Marcheys House signalbox, and realised that he would have to stop at West Sleekburn home signal. He thought he passed Marcheys House at walking speed, and used the brake steadily thereafter to prevent the speed rising much higher.

He knew the route well and thought he had his train fully under control, but as he made the final brake application to stop at the signal, the engine wheels began to skid. The fireman at once began to apply sand, and then stepped down to the cess to apply wagon brakes. Meanwhile the driver tried to reverse the engine.

The driver ascribed the skidding to the light rain which had begun to fall. He did

not whistle to the guard to apply the van brakes as he was busy trying to control the skid.

The fireman confirmed this evidence so far as he could remember events. But though on the ground at the time of the collision, his memory was affected by shock. He had difficulty over the wagon brakes, and had only got to the second wagon by the time of the collision.

The guard of the up train confirmed generally the driver's evidence. He was sure that the train was travelling slowly (at not more than 7-8 m.p.h. at Marchey's House) and was fully under control. He felt no need to apply the van brake before the collision occurred. This estimated speed of about an average of 7½ m.p.h. through the section is confirmed in the signal registers.

Attempts were made to break into the cab of the engine of the down train and divert an escape of steam, in a search for the engine crew. A driver, who had gone to the spot on hearing of the accident, showed determination and resource in entering the cab and diverting the flow of steam. He verified that the regulator was closed, and he also closed what he thought was the brake wheel valve. This suggests that the enginemmen had realised the danger in time for this valve to be opened before the collision took place.

Evidence from other drivers and passed firemen showed it was difficult to stop trains at the up home signal because of the gradient, but that only on rare occasions had the signal been over-run.

#### Inspecting Officer's Conclusion

Colonel Reed says that it is clear that the driver understood that he had been admitted into the section at Marchey's House under Regulation 5. He was satisfied that the driver approached the West Sleekburn home signal cautiously, but felt that he was not driving with sufficient care for this difficult section of line.

Acceptance of up mineral trains by West Sleekburn under Regulation 5 with the junction set for the branch line, Colonel Reed states, is not safe in view of the gradient, the proximity of the signal to the fouling point and the type of unfitted coal trains which use the line. The railway has now prohibited acceptance under Regulation 5 unless the down junction points are set for the main line.

The Marchey's House signalman is criticised for his incorrect procedure under Regulation 5, which had been framed in the light of many years of experience. But his action did not contribute to the accident. Colonel Reed also criticises a lengthman's failure to re-set the down branch line trap points so as to protect the up main line, as well as the supervisor's failure to notice this omission. But this omission, Colonel Reed says, did not contribute to the accident.

The delay in sending for doctors did not affect the fate of the two men who lost their lives. Colonel Reed observes that there should be a bias towards calling for doctors promptly and in anticipation of the need. Past experience has shown that there has seldom been delay in sending for doctors.

The North Eastern Region instructions regarding loads to be hauled by engines working goods trains, require that on certain specified sections of line Rule 131(ii) should be observed, enjoining the guard to apply the rear hand brake when travelling down a steep gradient. Colonel Reed considers that the up line from Marchey's House to West Sleekburn should be so specified.

The change in gradient which made conditions at this junction hazardous may be found at other places where mining subsidence can occur. Colonel Reed is advised that such gradients are being checked so that arrangements are not based on misleading data. He considers that the same precautions should be taken in other Regions.

## Beyer, Peacock & Co. Ltd.

### Period of reorganisation

The annual general meeting of Beyer, Peacock & Co. Ltd. was held on May 25 in London, Mr. Harold Wilmot, C.B.E. (Chairman and Managing Director) presiding.

The following is an extract from his circulated review:

The locomotive factory at Gorton entered the period I mentioned in my last review. In the long-term interests of the shareholders it was imperative to seize the right moment to embark on a major reorganisation of the factory which, in addition to retaining a Beyer-Garratt potential, would ensure conditions for the economic production of locomotive types other than steam.

This reorganisation started in July, 1959, and will be complete in the next few months. Your board is convinced that the Manchester locomotive factory will then be entirely suitable for the large scale production of main line locomotives of all modern types. The prospect of keeping these facilities reasonably occupied for the next few years would appear promising.

By our next annual general meeting I hope to be able to report a steady flow of diesel-powered locomotives from the reorganised works. Our latest estimates indicate that the capital costs involved will be reasonable and well within the financing capabilities of the company.

Your board has been occupied in the task of consolidating the group and turning it into a holding company type of structure as indicated in my last review. The holding company exercise is now complete in all its major aspects and the accounts are presented in the appropriate form. The holding company board is already conscious of benefits which will flow from the new organisation. I have personally relinquished a number of appointments in subsidiary companies—only retaining those with immediate problems or special temporary difficulties. Younger executives have been appointed to a number of key positions, and I have every confidence that this general move is in the best interests of the proprietors.

#### Anti-Attrition Metal Co. Ltd.

The only subsidiary which proved more intractable than I anticipated a year ago is Anti-Attrition Metal Co. Ltd. which made a large loss in 1959 (£95,686). This loss has been taken up in the consolidated accounts. I believe, however, that the reorganisation of management at Maidenhead and of the production equipment of that factory, will help towards a more effective selling effort and better financial results. Modest profits are already being made, and our weekly and monthly figures encourage us to hope for steady improvement.

As there is an outside interest in Anti-Attrition Metal Co. Ltd. amounting to 12½ per cent of the equity of that subsidiary your board has decided that a subvention payment is inappropriate as that would be in effect a subsidy by the shareholders of the holding company to the minority shareholders of that subsidiary. The result from an accounting point of view is that taxation chargeable for 1959 is greater than it would otherwise have been, but a tax loss is carried forward and will mean tax free profits in Anti-Attrition Metal Co. Ltd. for future accounts. To this extent and for those reasons the results of the Holding Company after tax appear to be less favourable than they are in reality.

All the other main producing subsidiaries made profits to an extent we consider not

unreasonable in a year of considerable recession for our types of product. In every case our forecasts for 1960 show improvements both in turnover and in total profits.

I would refer shareholders to the paragraph on dividends and dividend policy in my last review. The conditions there outlined have in the view of your board been met. In the first place the figures for 1959 are somewhat better than forecast a year ago. To undertake a change-over from steam to other forms of main line rail traction and to avoid during such a period a major loss on working may reasonably be regarded as exceptional in the locomotive industry. In the second place our forecasts for 1960, made on our usual lines, lead us to the expectation that the condition outlined last year—a profit of at least 10 per cent in 1960—will be achieved. Your board is, therefore, proposing the promised final dividend for 1959 of 12 per cent.

Mr. James Hadfield, M.B.E., has recently been appointed Deputy Managing Director. Mr. Hadfield has served Beyer, Peacock & Co. Ltd. in various capacities over a period of 36 years, and in addition has held a number of appointments in the subsidiary companies. I know of no one better fitted for the wider responsibilities he has assumed. The report and accounts were adopted.

## Parliamentary Notes

### B.T.C. Area Boards

Mr. F. Noel-Baker (Swindon—Lab.), Mr. E. Popplewell (Newcastle-on-Tyne—Lab.), Mr. J. B. Hynd (Attercliffe—Lab.), Mr. R. W. March (Greenwich—Lab.), Mr. Ellis Smith (Stoke-on-Trent C.—Lab.) and Mr. A. E. Oram (East Ham S.—Lab.) tabled the following motion on May 17 for discussion at an early date:

**Railway Area Boards:** That this House deplores the refusal of the B.T.C. to publish the names and salaries of members of the Area Boards of British Railways, and calls upon the Government to direct the Commission not to withhold information regarding its operations such as is published by other nationalised industries or is available to the shareholders of private companies.

## Questions in Parliament

### Euston Station

Mr. Woodrow Wyatt (Bosworth—Lab.) asked the Minister of Housing & Local Government on May 17, whether he would place a preservation order on the various buildings at Euston Station which the B.T.C. intended to demolish.

Sir Keith Joseph, Parliamentary Secretary, in a written answer: The L.C.C. has expert advice that the Great Hall prevents full advantage being taken of main-line electrification. The Minister does not, therefore, feel justified in intervening. The experts advised that the Doric Arch should be moved but that it could be re-erected elsewhere on the site.

### Location of Locomotive Sheds

Mr. Leslie Spriggs (St. Helens—Lab.) asked the Minister of Labour on May 16 if he had completed his discussions with the B.T.C. on the number and location of locomotive sheds which would be required for future motive power; and how he intended

to bring in the operation of Section 25 of the Factory Act, 1959.

Mr. Peter Thomas, Parliamentary Secretary, Ministry of Labour: My Department is continuing its discussions with the Commission on the application of the Factories Acts to railway running sheds. It is hoped to bring Section 25 of the 1959 Act into operation next year.

## Staff and Labour Matters

### Guillebaud Report

Since receipt of the Guillebaud Report and the intimation given to the trade unions by the Chairman of the British Transport Commission on March 24, 1960, that in the light of the Prime Minister's statement in the House of Commons on March 10, it should be possible for Commission and trade unions to reach a satisfactory agreement on the basis of the Report, joint working parties have been working out details for a possible basis of settlement. The working parties have now reported on the whole of the proposals for railway salaried and conciliation staff and an early meeting of the Railway Staff Joint Council will take place with a view to reaching a settlement.

In its report, the Railway Pay Committee of Inquiry came to the conclusion that there was justification for general increases to staff covered by the report of 8 per cent and 10 per cent in the rates of pay of wages and salaried staff respectively, and of additional percentages of 5 per cent and 10 per cent in respect of certain specified groups of staff who, having regard to their responsibilities, technical knowledge, skill, and other factors, were considered by the pay committee to be "out of line" or "badly out of line" with the general run of railway wages.

The report also envisaged separate rates of pay for drivers on train work and those on shunting work.

The proposals of the working party in regard to footplate staff were discussed by A.S.L.E. & F. at its annual assembly of delegates held at Paignton last week, when the proposals were endorsed by the assembly.

The General Secretary of the N.U.R., in a circular letter to his branches, has stated that there is every reason to hope that in the very near future there would be a final settlement arising from the pay committee's report.

In anticipation of the Guillebaud Report, railway salaried and conciliation staff received an interim increase of 5 per cent with effect from January 11, 1960. The operative date of any further increases would be a matter for discussion between the unions and the Commission.

### T.S.S.A. Annual Conference

In his presidential address to the Transport Salaried Staffs' Association annual conference at Margate on May 23, Mr. R. J. Gunter, Labour M.P. for Southwark, stated that the Government must decide what means of transport are to be provided in the interests of the whole community. He said: "the Government must tell the nation how it proposes to deal with transport as a whole. The present set-up is just crazy and railwaymen in particular ought not to be the everlasting 'whipping-boys.' Some Government some day has got to say, in the interests of the nation as a whole, that given an efficient railway service there must be restrictions on traffic pouring on to the roads. What futile nonsense it is to say that, regardless of the cost to the nation, anybody has a right to unrestricted 'C' licences. The decision as to what means of transport are to be provided in the interests of the whole community

must be a Government decision. It cannot be a matter solely for private vested interests. Each agency of transport should undertake that work which it could perform most efficiently and economically.

"It might very well pay the country in the long run to subsidise railways in one way or another so that the chaos and cost of road congestion might be relieved. Why should it be considered some form of blasphemy to suggest subsidising railways? Certain sections of private industry seem to be doing pretty well out of the Government."

## British Railways Camping Coaches

The camping coaches made available by British Railways between March and October provide sleeping accommodation for four, six or eight persons, a living room and a fully equipped kitchen. The eight-berth Western Region camping coaches consist of two two-berth and one four-berth cabins, the four-berth cabin being fitted with a movable bed which can be transferred to one of the two-berth cabins.

All coaches are fully equipped with crockery, cutlery, cooking utensils, towels, table and bed linen. Lighting, cooking and heating

generally are by paraffin fuel, the cost of which is not included in the rental. Supplies are obtainable from the stationmaster at a moderate charge. At certain stations lighting, cooking and heating are by electricity. Tenants pay for current by prepayment meter.

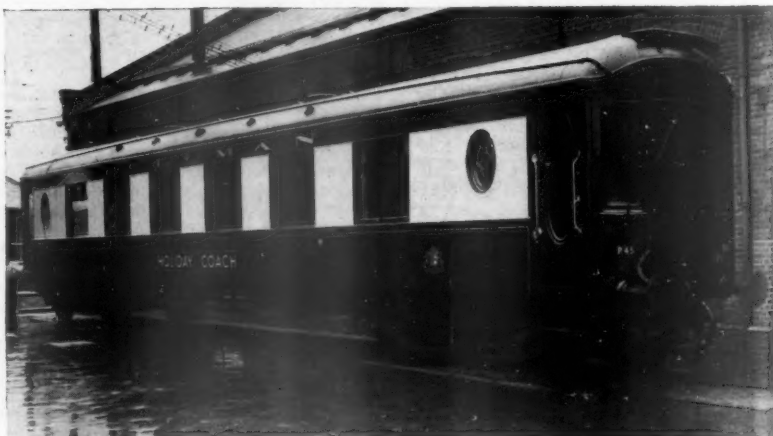
Drinking water and toilet facilities are available on nearby station premises.

Coaches are booked on the condition that tenants purchase in advance not less than three, four or six adult ordinary return rail tickets for a four-, six- or eight-berth coach as the case may be (two children counting as one adult) from their home station to the station serving the coach.

### Pullman Coaches

Six-berth luxury Pullman camping coaches are available for the first time this year. The apartments include interior sprung mattresses on the beds. Three are located in the Southern Region at Corfe Castle, Wool, and Sandling. Lighting, heating and cooking are by electricity. In the Eastern Region a luxury coach is located at Heacham and in the Scottish Region there is one at Morar, Inverness-shire; in these Calor gas is provided.

Camping cottages (North Eastern Region) and camping apartments (Scottish Region) are also available at attractive sites at rentals varying from £4 10s. to £12 a week according to season.



General view and sleeping compartment in coach converted from Pullman car



## Contracts and Tenders

### General Motors diesel-electric locomotives for Brazil

General Motors Overseas Operations of New York has received an order for 32 diesel-electric locomotives from the Rede Ferroviaria Federal, Brazil. This contract is being financed by a credit from the Import-Export Bank.

The Queensland Railways administration has approved the placing of the following contracts:—

Queensland Electric Steel Limited, Brisbane: 200 cast-steel bogies for cattle wagons

Walkers Limited, Maryborough: two 153-h.p. diesel-mechanical locomotives at a cost of £A.43,856

Commonwealth Engineering Pty. Ltd., Brisbane: two 2-ft. gauge locomotives costing £A.28,810.

The Argentine State Railways has placed an order with the Tecnar Company of Argentina, for 11 mercury-arc rectifiers for the General Mitre Railway. The value of the contract is 30,000,000 pesos and includes installation and ancillary material.

The Mitchell Construction Co. Ltd. has received a contract from the British Transport Commission for certain civil engineering works in connection with the construction of a new marshalling yard at Healey Mills, Thornhill, in the North Eastern Region of British Railways. The value of the contract is £80,000.

Commonwealth Engineering (Qld.) Pty. Ltd. has been awarded a contract for 200 small hopper ballast wagons for use in the Mount Isa Line modernisation project. The tender price is reported to be £290,400.

British Railways, Eastern Region, has placed the following contracts:—

Haymills (Contractors) Limited: building work in connection with the renewal of electrical distribution system (Stage V) in the Stratford area

Higgs & Hill Limited: demolition and reconstruction of decking and staircases to booking hall and services and erection of new span to existing steel footbridge at Lea Bridge Station

Pirelli-General Cable Works Limited: supply and installation of rolled down telecommunications cables between Liverpool Street and Bury Street Junction and main distribution frame and Hackney Downs and Chingford

British Insulated Callender's Cables Limited: supply and installation of telecommunications cables between Bury Street Junction and Bishops Stortford and between Broxbourne and Hertford East

Joseph Westwood & Co. Ltd.: supply, fabrication and delivery of steelwork for underbridge No. 1001D between Colchester and Ardleigh.

British Railways, London Midland Region, has placed the following contracts:

Fergus Decorations Limited: External redecoration of Euston House

Norwest Construction Co. Ltd.: New footbridge, pavings and drainage at Huskisson Goods Depot, Liverpool

Ashwell & Nesbit Limited, hot and cold water services to cleaning and watering points at Crewe South Carriage Shed

Arundel (Contractors) Limited, cleaning and painting of Nottingham Victoria passenger station

Cubar Construction Co. Ltd.: Demoli-

tion of station buildings and erection of temporary station at Stafford

D. B. Evans (Bilston) Limited, new washing facilities and services at Grange Lane Carriage Depot, Birkenhead

Harbour & General Works Limited: Lightweight and main-line diesel shed at Cricklewood

Kyle Stewart (Contractors) Limited: new diesel maintenance depot at Marylebone

Wilson Lovatt & Sons Ltd.: construction of a new viaduct, new bridges, widening existing bridges, earthworks, drainage, roadworks and other ancillary works near Rugby Midland Station

A. J. Binns Limited: London district 1960 fencing renewal programme

Edward Wood & Sons Ltd.: workshop and battery charging room, pavings and external services at Chester General Goods Depot

Head Wrighton Teesdale Limited: supply, fabrication and delivery of steelwork and precast concrete deck units for intersection bridge No. 99 on Trent Valley line

Leonard Fairclough Limited: Macclesfield (Hibel Road) to Colwich line, bridge No. 54 and Loop line (Etruria to Kidsgrove) bridge No. 54. Lowering of roadway for Kidsgrove Urban District Council.

British Railways, North Eastern Region, has placed the following contracts:—

Wellerman Bros. Ltd.: strengthening of Bothal Viaduct, near Morpeth

Brighthouse Estate Co. (Builders) Ltd.: accommodation for the district Outdoor Machinery Engineer at Kidacre Street, Leeds

General Electric Co. Ltd.: two steel gantries to support lighting at English Street Goods Depot, Hull.

Dowsett Engineering Construction Limited: construction of the main-line embankment and drainage works in connection with a new marshalling yard at Lamesley

R. Costain Limited: foundations for carriage washing machines at South Gosforth and at Heaton

Dorman Long Limited: supply and delivery of steelwork for the road bridge at Benningbrough

Ruddock & Meigham Limited: filling-in of accommodation bridge at Methley North

W. E. Hargrave Limited: supply of a heating and hot-water installation in the Goods Offices at York

A. Robinson (Contractors) Limited: slag filling in connection with the construction of a new marshalling yard at Newport

The Triton Engineering Co. Ltd.: 11 4 ft. by 4 ft. vibrating tables for the Central Concrete Depot, York

Liner Concrete Machinery Co. Ltd.: supply and delivery of four  $\frac{3}{4}$  cu. yd. diesel dumpers

J. R. Rutherford & Sons Ltd.: building work at Greensfield Motive Power Depot, Gateshead

F. & J. Watkinson: erection of temporary staff accommodation at Leeds City

D. Anderson & Son Ltd.: roofing for the Yardmaster's Office at the new marshalling yard at Newport.

The contract price for the five 1,500-b.h.p. diesel-electric locomotives ordered by the Queensland Government Railways from the

English Electric Co. of Australia (Pty.) Ltd., as recorded in our issue of April 29, is reported to be £473,915.

The Export Services Branch, Board of Trade, has received calls for tenders as follow:—

#### From India:

12 400-h.p. diesel-hydraulic locomotives suitable for 5-ft. 6-in. gauge, O-C-O type, with 14 ton axle load, fully erected and complete with spare parts and tools.

The issuing authority and address to which bids should be sent is the Chief Engineer, Madras Port Trust, Madras. The closing date is July 11, 1960. Documents may be inspected at the Board of Trade, but photocopies are not available. The Board of Trade reference is ESB/12934/60.

#### From Victoria:

40 brake van sets of bogie parts, comprising bogie side frames, bolsters, unit brake beams, and bolster control device parts.

The issuing authority and address to which bids should be sent is the Secretary, Victorian Railways, Spencer Street, Melbourne, C.1. The tender No. is 61,693. The closing date is June 1, 1960. The Board of Trade reference is ESB/13511/60.

#### From Greece:

10 items of spare parts for locomotive air pumps.

The issuing authority and address to which bids should be sent is the Purchasing & Stores Department, Alelencic State Railways (SEK), 126, Polytechnion Street, Athens. The tender No. is 4634. The closing date is June 10, 1960. The Board of Trade reference is ESB/13542/60.

#### From Chile:

36 complete speedometers for three types of electric locomotives. Axle generator type with speed indicator (0-140 k.p.h.) in the driver's cab.

The issuing authority and address to which bids should be sent is, Jefe de la Sección Eléctrica y Diesel del Departamento de Tracción y Maestranzas, Ferrocarriles del Estado, Alameda esq. Serrano, 3er piso, Santiago. The closing date is June 15, 1960. The Board of Trade reference is ESB/13298/60. Photocopies of tender documents are not available.

200 12-ton hydraulic jacks

20 20-ton hydraulic jacks.

The issuing authority is the Chilean State Railways. Bids should be sent to SR. Jefe del Departamento de Tracción y Maestranzas, Alameda 924, 2° piso, Santiago. The closing date is June 6, 1960. The Board of Trade reference is ESB/13163/60. Photocopies of tender documents are not available.

Further details relating to the above tenders together with photo-copies of tender documents, unless otherwise stated, can be obtained from the Branch (Lacon House, Theobald's Road, W.C.1).

**BURNT MILL AND HARLOW STATIONS TO BE RENAMED.**—Two stations on the Liverpool Street-Bishops Stortford Cambridge main line of the Eastern Region, British Railways, will be re-named on June 13. Burnt Mill will become Harlow Town and the new name for Harlow station will be Harlow Mill.

## Notes and News

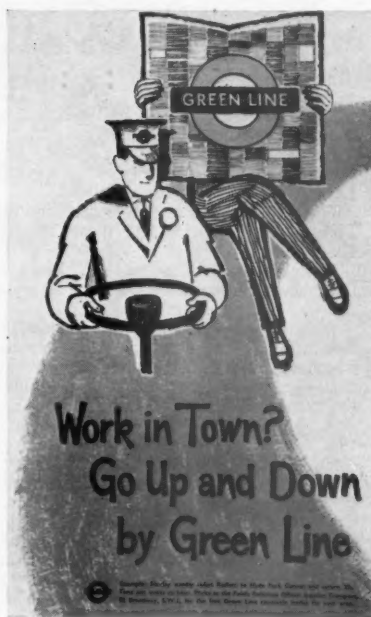
**Eastern and N.E. Regions Summer Timetable.**—The journey time of the "Elizabethan" between Kings Cross and Edinburgh Waverley will be 6 hr. 35 min. non-stop in each direction, and not 6 hr. 5 min. as was stated in error on page 589 last week.

**Railway Benevolent Institution.**—The annual meeting of members of the Railway Benevolent Institution will be held at the Railway Clearing House, 163, Eversholt Street, London, N.W.1, on June 24, at 4 p.m. The business will be: (a) to receive the report of the Board of Management, and (b) to transact the ordinary business of the Institution.

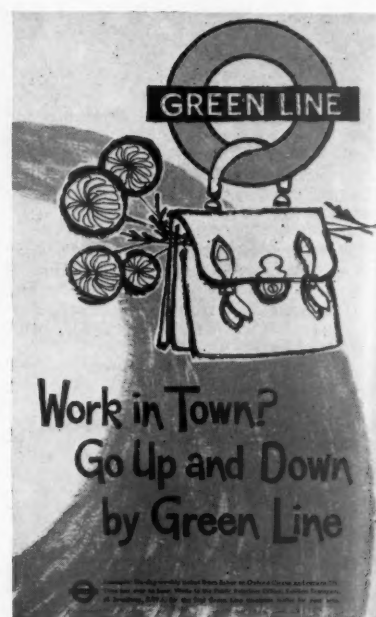
**Chettisham Station to Close.**—Chettisham Station, on the March-Ely line of British Railways, Eastern Region, will be closed to passenger traffic from June 13. Passengers will be catered for at Ely station and by bus services operating in the area. A parcels collection and delivery service will continue to be available.

**Simms Motor & Electronics Corporation Limited.**—Figures for the financial year 1959 of the Simms Motor & Electronics Corporation Limited show a very substantial improvement over the previous twelve months. The group profit before taxation exceeded £1,000,000 at £1,037,690, compared with £632,072 in the previous period. After taxation, the figures were £489,490 (1959) against £266,072 (1958). After transferring £100,000 to general reserve, a final dividend of 10 per cent was declared, making 21½ per cent for the year (including a special interim dividend of 6½ per cent).

**Birmingham-Redditch Diesel Service.**—A new hourly service with multiple-unit diesel trains has been brought into operation between Birmingham New Street, Kings Norton, Barnet Green and Redditch. Departures from Birmingham and Redditch are both at 30 min. past each hr., with slight variations, from New Street from 8.30 to 10.30 p.m. inclusive, and from Redditch from 10.30 a.m. to 10.30 p.m., with additional trains inward at 6.30, 7.26, 8.0 and 8.25 a.m. and 11.15 p.m. The last-named is non-stop in 28 min., but



Two posters featuring London Transport Green Line coach services (see editorial reference on page 615)



all the others take 40 min. with six intermediate stops. There are a few additional workings between New Street and Barnet Green only.

**New Green Line Posters.**—Two new posters issued by London Transport draw attention to the Green Line coach services, using the theme "Work in Town? Go Up and Down by Green Line." One shows a despatch case with flowers to emphasise the link provided between town and country by the Green Line; the other, with its newspaper-reading businessman behind the coach driver, reminds the private motorist of the ever-increasing strain of driving up to town and then finding some place in which to park. Displayed on roadside bus shelters, the

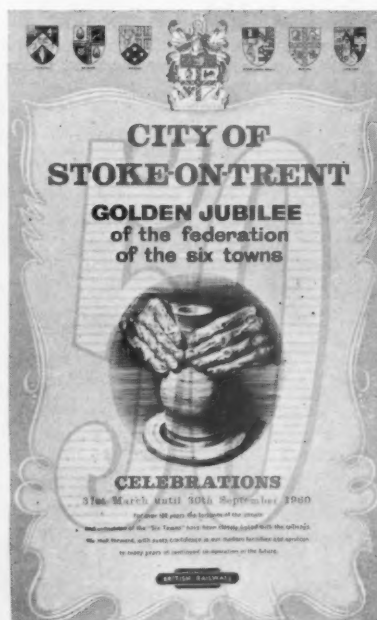
posters give an example of charges for weekly tickets. They are also being used as "copy" in press advertising.

**Stores Lost in Fire.**—A fire on May 20 swept through a big single-storey store at the Pressed Steel Company's works at Linwood, Renfrewshire. It destroyed material and fittings used in British Railways coaches. Damage was estimated at several thousand pounds.

**Robert Hudson Limited.**—In view of the difficult trading conditions which continue to prevail at home and abroad, the Directors of Robert Hudson Limited considered it prudent to reduce the interim dividend from 5d. to 4d. per 5s. share for the year ending June 30, 1960. When final results are available they hope to be in a position to recommend a final dividend which will yield a total of 9d. per share, compared with 10d. per share previously.

**London Midland Region Publicity.**—A poster and display card to popularise Euston-Glasgow day services is now being displayed at stations in the London area of the London Midland Region of British Railways and on Underground trains and a leaflet is being distributed to the public. Another poster marks the golden jubilee of the federation of the "Six Towns" which form Stoke-on-Trent and its long association with British Railways. Designed by Studio Seven, the poster is lithographed in six colours.

**Great Eastern Progress Chaser Competition.**—The 1960 Progress Chaser Competition, organised by the Great Eastern Line, British Railways, Eastern Region, starts on May 28 with a special excursion to Norwich. Interest in the competition, now in its third year, is considerable. The competition is open to all young people between the ages of 11 and 16-plus. All that competitors have to do is to register as Progress Chasers at their nearest Great Eastern railway station. They will then receive a Progress Chaser badge and an authority card allowing them special fares. Progress Chasers write short essays on the progress they have observed in

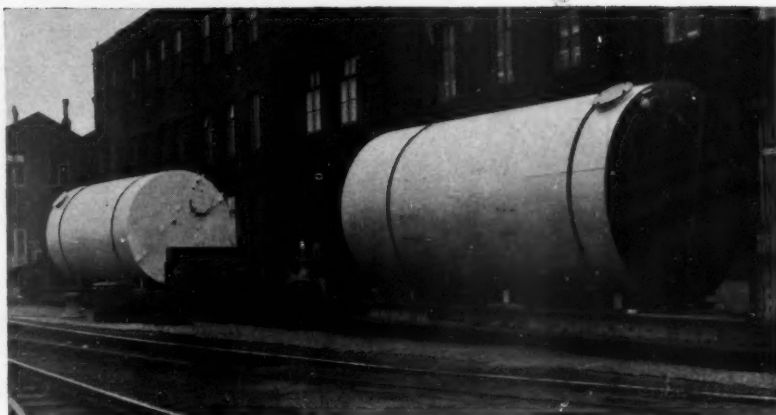


New London Midland Region posters (see reference on this page)



modernisation, in all its aspects, on the Great Eastern Line during the holiday period. When the competition finishes in September, all essays are carefully judged by a panel of Railway Officers and well-known personalities in the transport world. Prizes include free two-day visits to London, trips on the footplate of express steam locomotives or in the cab of a diesel; visits to marshalling yards, signalboxes, goods depots, motive power depots, and a control room.

**Manufacture of Diesel Oil Fuel Tanks at Stratford Works.**—During the interim period between the cessation of steam repairs and the introduction of diesel locomotive repairs the boiler shop at Stratford Works, British Railways, Eastern Region, is carrying out manufacture of diesel oil fuel tanks. The first two tanks, shown in the illustration, are of 10,000 gal. capacity, and are destined for the fuelling installation to be built at Liverpool Street. The tanks are 10 ft. 2 in. in dia., 21 ft. long, and are rolled from  $\frac{1}{4}$ -in. plate with  $\frac{3}{8}$ -in. bottoms. Each tank took 15 days to complete. Stratford Works is also to manufacture two 25,000-gal. tanks for the new diesel sheds at Stratford, and other tanks will be constructed later for Colchester, Hitchin, and Cambridge.



Two 10,000-gal. diesel fuel tanks built at Stratford Works for fuelling installation at Liverpool Street

these remaining routes has been decided upon in view of the traffic advantages which will be made possible by the use of a standard vehicle and by the financial savings which will result.

**Dedication of New Pew at Longmoor Garrison Church.**—A new pew, presented by 152 Railway Construction Company, Royal Engineers, will be dedicated in the Garrison Church of St. Martin at the Railway Training Centre, Longmoor, on May 29.

**Tax Relief Urged for Public Road Transport.**—Opening the Public Transport Association conference in Scarborough last week, the Chairman, Mr. A. F. R. Carling, appealed for a "helping hand" from the Government. Public transport, he stated, was an efficient means of getting to and from work, the most efficient in terms of scarce road space. The bus passenger took much less than one-tenth of the space required by the motorcar driver or passenger. They must consider the comparative use made of the roads for garaging overnight, by motorcars and by buses. If there could not be remission of fuel tax all round, there was ample ground for a special concession in favour of public transport.

**New Eastern Region Fares.**—Many of the full ordinary second class fares in the Eastern Region, British Railways, will be increased from June 12 to 2½d. a mile for distances up to 200 miles. The Region points out that there will be a tapering of fares beyond this distance and second class single fares over 50s. will not be increased. In addition, a measure of flexibility of charging will be adopted, particularly in country districts, where it is considered commercially expedient. First class ordinary fares in all cases will be approximately 50 per cent greater than second class fares.

**M.L. Aviation Co. Ltd. Railway Signalling Exhibition.**—On May 16 an exhibition was arranged by M. L. Aviation Co. Ltd. to introduce L.M. Ericssons (Sweden) railway signalling and telephone equipment. The exhibition, held at the Great Western Hotel, Reading, was formally opened by Mr. E. N. Mobbs, Managing Director, M.L. Aviation Co. Ltd., and Mr. H. Insulander, Managing Director, L.M. Ericssons Signalaktiebolag, Sweden. Visits were arranged, by permission of Mr. A. A. Cardani, Signal Engineer, Western Region, British Railways, to the Western Region Signal School at Reading, where the Swedish equipment shown included point machines and lifting barriers, and multi-aspect signalling. The display in the Great

Western Hotel included equipment from M.L. Aviation Co. Ltd. and L.M. Ericssons; among which were a relay interlocking control panel and a Centralised Traffic Control Key set. The function was attended by Signal Engineers and their Assistants from British Transport Commission and all regions of British Railways.

**L.M. Region Whitsun Holiday Trains.**—The London Midland Region, British Railways, will run over 800 additional trains for Whitsun holidaymakers between June 2 and June 8. The heaviest days will be the Sunday, June 5 (206 trains), and Monday (203). There will be 134 extra trains into and out of Euston and 87 to and from St. Pancras during the holiday period.

**Reduced Fares in the Southern Region.**—British Railways, Southern Region has pointed out that there will be more cheap fares than before and at the former cheap levels or below, when most ordinary fares are increased on June 12. Continental and Channel Islands fares will not go up at all. Among the new cheaper fares are Sunday excursions to Bournemouth from the greater London area and more "go-as-you-please" country afternoon tickets giving much greater freedom of routes to passengers. Midweek holiday tickets available throughout the summer will not be increased, and the discount from the ordinary fare will be up to 10 per cent greater than last year. The prices of seven-day holiday runabout tickets will not go up. Nor for the present will the many cheap day and half-day tickets, some of which are at less than the single fare for the double journey. Fares and car-carrying charges on the new car tourist service to the West of England are not affected by increases.

**Co-operation Between Rail and Road.**—Mr. R. Gresham Cooke, Conservative M.P. for Twickenham, stated at a meeting of Conservative trade unionists at Harrogate, Yorkshire, last week, that if the railways were to get back the long-distance passenger, they must regard the car as their friend and not their enemy. The businessman or holiday-maker, when he got to his destination, wanted a car for the day for his short trips. He suggested that the railways should have cheap hire-cars standing in their station yards which, for £1 or so, could be used for the day. Almost the greatest revolution in road transport in the past 70 years was the pneumatic tyre. "We should consider," he added, "whether 100 m.p.h. trains could not be like cars with light, low-slung coaches running on pneumatic wheels with an electric motor driving

**London Midland Region Fare Alterations.**—The London Midland Region, British Railways, has pointed out that there will be no increase in its long-distance fares for journeys of over 275 miles nor for sea journeys or through journeys to and from Northern Ireland, the Republic of Ireland and the Isle of Man. Other fares that will remain unaltered are mid-week return fares, fares for the "Starlight Specials" to Scotland, and car/sleeper service fares. Holiday runabout tickets will be maintained at the present rates. Fares to be increased are second class fares for up to 200 miles which will be increased to 2½d. a mile as from June 12, with a diminishing rate of increase up to 275 miles. First class fares will remain approximately 50 per cent above second class, and return fares will remain double the single.

**International Instruments, Electronics & Automation Exhibition Opened.**—The third International Instruments, Electronics & Automation Exhibition was opened at Olympia, London, last Monday by Lord Mills, the Paymaster-General. It closes tomorrow, May 28. The Grand Hall, Extension, and the National Hall are occupied by some 500 exhibitors from 15 countries, including the United States, France, Germany, Austria, Belgium, Denmark, Italy, Switzerland, Holland, Poland and Czechoslovakia. The exhibition is double the size of the last I.E.A. held in 1958.

**All London Trolleybuses to be Replaced by 1962.**—London Transport Executive has announced today that it has decided to complete the conversion of all London trolleybus services to diesel bus operation by 1962. This will mean eliminating the small pocket of 110 post-war trolleybuses in south-west London which it was previously intended to leave for a further period. Seven routes are affected, operating in Kingston, Tolworth, Surbiton, Wimbledon, Hampton Court, Twickenham, Hounslow, Chiswick and Hammersmith. These routes will all be converted to operation by Routemaster diesel buses, following on immediately after the completion of the original conversion scheme now in hand, which is programmed to be finished in January 1962. When this stage is reached the last trolleybuses will disappear from the London streets and the whole of London Transport's road services will be provided by diesel-engined buses. The conversion of



every wheel. In this space age we cannot cling to Victoria concepts and materials." Mr. Gresham Cooke stated that he would like to see the subsidy related to the cost of maintaining the rail track, about £100 million a year. To offset that it would be fair for the railways to pay tax on their diesel oil at 2s. 6d. a gallon, which would bring £30 million to the Government.

**B.I.C.C. Group Unilateral Selling Scheme for Rubber and Thermoplastic Insulated Cables.**—Changes in the structure of the electric cable making industry have caused the British Insulated Callender's Cables Group to re-organise both its cable production facilities and its marketing arrangements. As already reported the factories of the Metropolitan Electric Cable & Construction Co. Ltd. and the St. Helens Cable & Rubber Co. Ltd. will cease cable production in the near future, and their output will be concentrated at other factories within the Group. To augment their service to customers throughout the country, B.I.C.C. Limited has announced that from June 1, 1960, the home sales forces of Glovers, St. Helens, Metropolitan, Scottish, and Telcon, concerned with the sale of cables insulated with rubber or thermoplastics, will combine with the B.I.C.C. home sales organisation and will sell a standard product presented on a standard drum or reel identified by the B.I.C.C. Group trademark.

## Forthcoming Meetings

**May 27 (Fri.).**—Institution of Locomotive Engineers, at the Institution of Mechanical Engineers, 1, Birdcage Walk, Westminster, S.W.1. Joint symposium with the Aluminium Development Association on the application of aluminium to railway rolling stock. Morning session, 10 a.m. to 12.30 p.m. Afternoon session, 2.30 to 5 p.m.

**June 2 (Thu.).**—The Model Railway Club, at Keen House, Calshot Street, Kings Cross, N.1, at 7.45 p.m. "Scenic Modelling," a talk by Mr. E. B. Clothier.

**June 10 (Fri.).**—Permanent Way Institution, East Anglia Section. Visit to Ford Motor Co. Ltd., Dagenham.

**June 10 (Fri.).**—The Railway Club, at the Royal Scottish Corporation, Fetter Lane, E.C.4, at 7 p.m. Paper on "The Thetford & Watton Railway and its associates," by Mr. B. D. J. Walsh.

## Railway Stock Market

After the set-back in stock markets which followed the Summit Conference fiasco, steadier conditions developed and buyers were more in evidence, though a good deal of caution persisted because of conflicting views about the trend of Wall Street over the next few months.

Sentiment was not affected to any extent by talk in the City that the Chancellor of the Exchequer, Mr. D. Heathcoat Amory, may tighten the credit squeeze before long by increasing the special deposits made by the banks to the Bank of England.

Only a few dealings were recorded in most foreign rails. Antofagasta ordinary stock eased to 14½, compared with 14½ a week ago, and the preference from 30½ to 30. United of Havana second income stock remained at 6, Sao Paulo Railway 3s. units were 1s. 3d.

Elsewhere, Mexican Central "A" bearer debentures at 59 were maintained on balance.

Chilean Northern first debentures were

59½. Costa Rica ordinary stock was fractionally easier at 37; the second debentures were 110xd and the first debentures 90.

International of Central America remained at \$24, with the preferred \$114½. Brazil Railway bonds were quoted at 6, Paraguay Central prior debentures at 14 and Guayaquil & Quito assented bonds at 77.

Compared with a week ago, Canadian Pacific have strengthened from \$45½ to \$46½. The 4 per cent preference stock was 59½ and 4 per cent debentures 65½, White Pass shares were \$12½.

In other directions, Nyasaland Railways shares were again 10s. with the 3½ per cent debentures 48½xd. Midland Railway of Western Australia ordinary stock was quoted at 5½. West of India Portuguese capital stock was at 111 and the 5 per cent debentures at 93½. Barsi ordinary stock was 16.

Engineering and kindred shares reflected the general trend of markets, and were lower on balance, but declines were smaller than in many other groups of shares. Birmingham Wagon eased from 32s. 9d. a week ago to 32s. 3d., North British Locomotive remained at 9s., Gloucester Wagon 10s. shares eased from 11s. 3d. to 10s. 9d. and Wagon Repairs 5s. shares remained at 12s. 4½d.

Beyer Peacock 5s. shares at 7s. 4½d. were virtually the same as a week ago, while Charles Roberts 5s. shares have strengthened from 12s. 6d. to 12s. 9d. Westinghouse Brake attracted some attention and were a good feature, having risen on balance from 48s. to 49s.

The yield of 5½ per cent continued to draw attention to Associated Electrical, which strengthened from 53s. 10½d. a week ago to 54s. 1½d. General Electric eased from 38s. 10½d. to 37s. 10½d. and English Electric from 39s. 3d. to 38s. 10½d. Crompton Parkinson 5s. shares at 12s. 3d. were the same as a week ago. B.I. Cables were 52s. 3d. following the chairman's annual statement. Davy-United, after receding, have firmed up to 106s. 6d. and Herbert Morris 10s. shares were firmer at 40s., but after their recent rally, Babcock & Wilcox came back to 36s. 4½d., though Vickers have been firmer at 32s. 3d. the yield of over 6 per cent attracting buyers. Clarke Chapman were easier at 48s.

Dowty Group 10s. shares have risen sharply to 35s., and Pressed Steel 5s. shares at 32s. 9d. were within 3d. of a week ago, while Stone-Platt at 52s. 9d. have been well maintained. G. D. Peters shares, which remained firmly held, were again quoted at 19s. 4½d. Holman Bros. 10s. shares were 22s. and Broome & Wade 5s. shares 19s. 4½d. T. W. Ward strengthened afresh from 141s. to 142s. 6d., while Ruston & Hornsby at 28s. 9d. more than held last week's rally.

Steel shares were rather less active, the disposition being to await the Richard Thomas share offer, now generally expected next month.

## OFFICIAL NOTICES

**TORONTO TRANSIT COMMISSION TENDERS FOR RAPID TRANSIT CARS FOR BLOOR-DANFORTH - UNIVERSITY SUBWAY.** Sealed tenders, endorsed "Tenders for Rapid Transit Cars for Operation in University & Yonge Street Subways" will be received by the Toronto Transit Commission at its office, 1900, Yonge Street, Toronto until one o'clock p.m. Eastern Standard Time, on Monday, 22 day of August, 1960.

The work for which such tenders are invited consists of the construction and delivery of 40 to 50 Rapid Transit passenger motor cars (20 to 25 two-car units) for operation in trains of from two to eight cars, as specified in the Contract Documents.

All tenders must be made upon blank forms of tender as furnished by the Toronto Transit Commission and included in the Contract Documents, and shall be made in accordance with the provisions contained

in said documents, and must be accompanied by a marked cheque, payable to the Commission, in the amount of \$125,000.

The successful tenderer will be required to furnish, execute and deliver to the Commission a Performance Bond of 100 per cent of the contract sum satisfactory to the Commission in the terms and within the time set out in the Contract Documents.

The Contract Documents, including specifications, are available to tenderers at the office of the Toronto Transit Commission, 1900, Yonge Street, Toronto.

A deposit of \$100.00 is required. This deposit is refundable on return of Contract Documents in good condition within 30 calendar days after opening of the tenders.

The Toronto Transit Commission reserves the right to reject any or all tenders without assigning a reason and does not bind itself to accept the lowest or any tender.

No tender may be withdrawn, after the scheduled closing time for receipt of tenders, for at least forty five (45) calendar days.

H. E. Pettett, General Secretary,  
Toronto Transit Commission.

Toronto, Ontario.

## MULLARD EQUIPMENT LIMITED are seeking a COMMERCIAL REPRESENTATIVE

An engineer with railway signalling background is required as a Commercial Representative by this electronic firm which forms part of a large group with increasing interest in the field of railway signalling.

This is a new appointment, and it requires someone who is prepared to build up contacts and business based on the Company's own development resources and on the products of the associated members of the Group. A background in existing signalling equipment and an ability to appreciate new electronic techniques are essential.

The position would be of interest either to a young engineer anxious to improve his prospects or a more experienced man wishing to augment his pension and continue active in his profession. The commencing salary will be in the £1,200—£1,500 range.

The appointment will be based in Central London until a date in 1961, and thereafter in Crawley, Sussex.

Please write for application form, quoting CR/2, to Personnel Officer, 51/55 Garratt Lane, London, S.W.18.

**DIESEL TRACTION ENGINEER** required for design and contracts work on engine equipments and complete locomotives for British Railways and Overseas. Applicants must have initiative, versatility and ability to tackle wide variety of technical and commercial work and be able to write clear and concise letters and reports and discuss problems of design with manufacturers and railway engineers.

Good general and technical education essential, preferably Engineering Degree, with some practical training. Send in confidence full details of qualifications, experience, positions held, salaries, etc., to Manager, Traction Department, Sulzer Bros. (London), Ltd., 31, Bedford Square, London, W.C.1.

**THE DIRECTOR GENERAL, India Store Department** Government Building, Bromyard Avenue, Acton, London, W.3, invites tenders for the supply of:—

Main Bar Frames with Frame Clips completely machined on all faces for W.P. Locomotives.	18 R.H.
Forms of tender may be obtained from the above address on or after the 27th May, 1960, upon payment of a fee of 10/- which is not returnable. If payment is made by cheque, it should please be made payable to "High Commissioner for India". Tenderers must send their tenders so as to reach this Office by 2 p.m. Thursday 7th July, 1960.	
Please quote reference Number 59/59. DB/R.L.Y.	

**PERMANENT WAY INSPECTOR** required by SIERRA LEONE GOVERNMENT RAILWAY on contract for tour of 18 to 24 months in first instance. Salary according to experience (including Inducement Pay) £966 rising to £1,359 a year. Gratuity at rate of 15% of total salary drawn. Outfit allowance £60 plus children's allowances up to £288 a year. Liberal leave on full pay. Quarters available at moderate rental. Candidates must be fully trained and competent platelayers with at least five years' experience in charge of labour, and be capable of making concise reports and returns. Membership of the Permanent Way Institute an advantage. Write to the Crown Agents, 4, Millbank, London, S.W.1. State age, name in block letters, qualifications and experience and quote M2B/51027/RA.

**MASTER MECHANIC** for railway operating Peru. Minimum five years' apprenticeship in steam railroad shops and practical experience with Diesel-electric traction essential. Age 30/40 years. Three-year contract, free passage out and home. Healthy mountain climate. Salary U.S. \$500 monthly. Box 975. The Railway Gazette, 33, Tothill Street, Westminster, London, S.W.1.

